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Worldwide Report

ARMS CONTROL

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SDI AND SPACE ARMS

SOVIET MILITARY JOURNAL ON SDI

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 4, Apr 86 (Signed to press 7 Apr 86) pp 7-14

[Article by Col I. Ignatev; "The U.S. "Star Wars" Program"]

[Text] The use of space as the area of scientific-technical progress is objectively becoming an important means of solving mankind's common problems: energy, food, ecological, and others. In view of its international character and the global scale of its potential consequences, it directly affects the interests of practically every state on the globe. It requires their close cooperation on questions of the peaceful use of space, and avoiding its militarization, as space is the "common legacy of manking."

Until now, thanks to the persistent efforts of the Soviet Union, a number of international legal restrictions on military activity in space have been enacted. However, the constantly obstructionist policies of the U. S. stand in the way of comprehensive agreements in this area. Since the late 1950s, the United States has sought to put the unique possibility of space technology at the service of its military. As a result of these efforts they have almost 100 functioning satellites of various space systems and launch another 15-20 new military satellites each year. These systems are used for communications, troop control, navigation, cartography, weather and reconnaissance and are not considered in a direct sense to be space weapons and do not pose the threat of direct attack.

However, the situation could change significantly in view of the U.S. intention to begin development and deployment of strike weapons designed to destroy targets in space or on earth from space. The Pentagon's activities towards militarizing space became especially animated after the Presidential directive on national space policy (1982). The main goals of this policy were declared to be "national security" and protection of the "vital interests" of the U.S. in space. To acheive these goals, the American leadership, in accordance with the directive, unilaterally reserved the right to undertake actions of a military character in space. Further steps by U.S. militarist circles demonstrated their desire not only to achieve superiority over the Soviet Union in space, but also to disrupt the established strategic parity by deploying space weapons and to open still another avenue in the arms race. The

so-called "Strategic Defense Initiative" (SDI), to which even the Western press assigned the more accurate name of "Star Wars" is a vivid example of this.

SDI was officially announced in March 1983, as a long-term program to create a multilayer antimissile defense system (ABM) system with space-based components directed against the Soviet Union. As stated by the U.S. Administration, this program supposedly pursues the goal of complete liquidation of the threat of ballistic missiles, and strengthening stability and international security, while in fact it is aimed at depriving the USSR of the possibility of a counterstrike. In the process, the fact that the U.S. militarists are conducting research in this area against the backdrop of a further buildup of American strategic offensive weapons and that they intend to use the results to create a space attack weapon which would be capable of appearing almost instantly over the territory of any state, creating a real threat to space, airborne and ground targets, are completely suppressed. In effect, as M.S. Gorbachev succinctly characterized this program in a talk with the editor of PRAVDA, "they talk about defense, but prepare for an attack; proclaim a space shield, but wave a space sword; promise to eliminate nuclear weapons, but in fact build up and improve them. They promise the world stability, but act to disrupt the military balance. Whatever they call it, 'Strategic Defense Initiative', space 'shield', etc., they represent a danger to the people. Therefore, the pivotal question of our time is the prevention of an arms race in space and curtailing it on earth. The American 'Star Wars' program remains the chief impediment on the way to solving these problems."

The new "initiative" signified a complete reorientation of efforts in the United States toward militarization of space. Starting in 1983, all RTD&E plans concerning ABM were quickly reviewed, a program for further research drawn up and a preliminary assessment of the possibility of practical implementation of the concept of a multilayered system with space-based elements was conducted. At that point the plans included a study of all technical means which could potentially find application in the prospective ABM system, including means to intercept operational-tactical and tactical missiles. As a result, SDI turned into the U.S. Defense Department's largest RTD&E program for which more than 5 billion dollars were allocated in a short time (FY 84-86).

According to press information, the structure and possible combat composition of the ABM system being created within the "Star Wars" framework have not yet been finally determined. However, it is expected that they will include no less than three echelons designated for destruction of ballistic missiles on all main sections of flight trajectory (Fig. 1)

The main role in the system is played by the first echelon, whose weapons must destroy ICBMs immediately after launch, within the first 3-5 minutes of flight, i.e., before separation of the warheads. American specialists believe that missiles on that portion of flight trajectory turn out to be large and sufficiently vulnerable targets which are easier to detect and destroy. As a result of their destruction, all the warheads on the ICBMs with separable heads would be immediately put out of action, thereby achieving maximum combat effectiveness. The second echelon is designed to destroy warheads on missiles

along the entire course of their flight beyond the lower levels of the

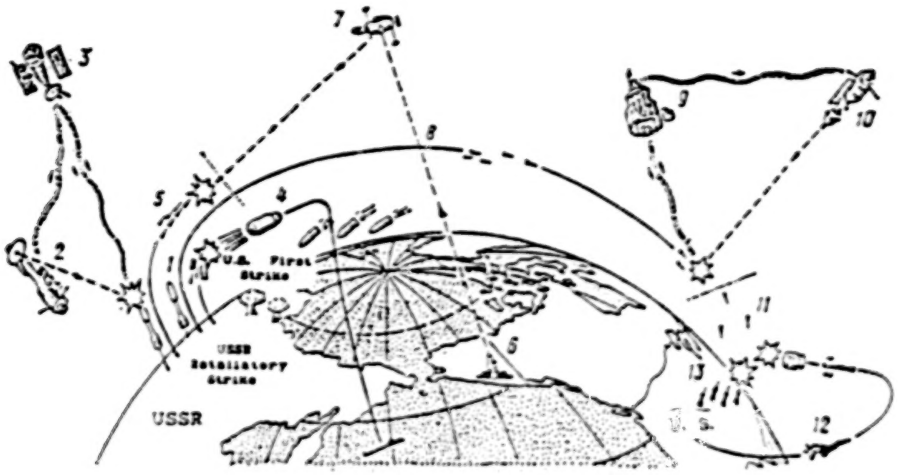

Figure 1. Concept of the American Multi-Echeloned ABM System with Space-Based Elements

1. ICBM trajectory powered flight phase.
2. Combat space station.
3. Early warning satellite.
4. Submarine-launched missile with X-Ray laser.
5. ICBM warhead separation (warhead separation and detachment of false targets).
6. Powerful earth-based laser installation.
7. Superreflecting orbiting mirror.
8. Warhead mid-course trajectory.
9. Satellite for tracking, identification and target designation.
10. Space platform with accelerator weapons.
11. Warhead terminal phase.
12. Airborne intercept missile installation.
13. Long-range and close-in anti-missile missiles.

atmosphere. The third echelon must intercept targeted warheads after they enter the lower levels of the atmosphere where recognition is easier due to natural braking and the slowness of the lighter false targets.

According to the author's plan, the main components of the multilayered ABM system would be means of detection, tracking and recognition of ballistic targets, directed energy weapons and kinetic (conventional) weapons and combat command and control equipment.

In order to detect, track and recognize targets within the SDI framework, radar and optical (infrared) means designed chiefly for space platforms and aircraft are being developed. As well as special missile platforms launched to meet incoming warheads at the signal of an early warning system.

In the directed energy weapons area, research embraces powerful lasers (including X-ray with nuclear pumping), elementary partical accelerators and electromagnetic radiation (UHF) generators. Military space stations with laser and accelerator weapons with the exception of X-ray lasers are designed for permanent space deployment. X-ray lasers whose energy source is a nuclear explosion are expected to be launched in the direction of their targets by means of rocket platforms from submarines at the signal of an early warning system. In the case of ground basing for these powerful lasers, it is expected that their beams will be guided to the ICBM warheads by large mirrors on space platforms.

As for kinetic weapons, long- and short-range ground antimissile missiles, as well as electro-magnetic cannon and space based jet-propelled charges, are being developed.

For centralized control of these components super-computers are being developed, artificial intelligence research is being conducted and new machine languages and algorithyms developed. At the same time, in order to evaluate the practical possibilities of creating an ABM system, the general need for energy sources, the survivability of individual components and the methods of organizing the utilization of space weapons in orbit are being formulated.

Work on the SDI program at present is still directed at solving basic problems, research into possible variants to an ABM combat system, and experimental testing of individual technical solutions.

As reported in the foreign press, as part of the plans for creating a new offensive weapon, tests of X-ray lasers are continuing on a range in Nevada. In 1984-85, the intercept of dummy MINUTEMAN ICBM warheads at great altitudes was accomplished at the American Kwajalein air defense range (in the Pacific Ocean) using an experimental long-range homing anti-missile missile, and on the range at White Sands (New Mexico) several launches of close-range antimissile missiles were carried out. On the same range, the Americans conducted an experiment to destroy a TITAN ICBM body held stationary on earth with an experimental laser unit from a distance of almost 1 km. In the summer of 1985, a series of experiments on low-power ground lasers were conducted on a range in Hawaii to work out methods to track rapidly moving targets with lasers. The unit's laser beam was directed at small reflectors located on DISCOVERY in its orbital stage (the shuttle's 18th flight) and on special missiles launched to a great height specially for this purpose. Tests are being conducted in the University of Texas laboratories on an experimental cannon and, simultaneously the development of a more modern model with an aimable barrel almost 40 m long is going on.

Special attention is being paid in SDI to creating a directed energy weapon. American specialists see this weapon not only as the main component of the prospective ABM system, but also as a potential means of destroying space targets, strategic bombers and cruise missiles in flight. The levels of laser power reached permitted the U.S. Defense Department back in the early 1980s, to conduct field tests to destroy, with ground and air laser units, such moving targets as radio-guided drones, air-to-air missiles and anti-tank missiles. The most immediate goal of the research is completion of the "Space

laser triad" program intended to test a scale model of a combat laser unit first on the ground and then on board the shuttle.

Work on new-in-principle new types of weapons is being conducted in such major U.S. research centers as the Lawrence Livermore Laboratories (workforce of approximately 8,000), the Los Alamos National Laboratory (7,500 highly-qualified specialists) and the Sandia Company's laboratories (6,900 scientists). The Livermore laboratory's annual budget is almost 800 million dollars, half of which is spent on SDI and other military programs. Within the domain of these organizations are powerful elementary particle accelerators for military research. They develop various types of lasers and study the mechanism of the effect of directed streams of energy on construction materials and radioelectronic devices.

Proponents of the U.S. military industrial complex emphasize at every turn the supposed strictly research nature of the SDI program. However, judging by foreign press announcements, along with RTD&E, it envisions both production and deployment of an anti-missile combat defense system. Realization of the whole program is expected to take place in four stages. The first stage (to the 1990s) encompasses all the basic research. In the second, mockups, test models and individual components will be tested and in the third and fourth, construction of a multilayer ABM system with space-based elements will be begun and completed. It is expected that more than 30 billion dollars will be spent in just the first year of this "research" and, according to the estimates of American experts, up to 70 billion dollars could be spent in just ten years. Total expenditures on the program over 20-25 years, including the deployment of a complete multilayer system, they suggest, could reach the fantastic sum of 1-1.5 trillion dollars.

In view of this, U.S. official circles have announced, in order to placate the American taxpayers, that the ABM system would be deployed only in the event that a high degree of effectiveness and survivability is evidenced and that estimated costs would be lower than the Soviet Union's expenditures on the creation of a reliable means of overcoming such a system. Pentagon strategists likewise do not exclude the possibility of deploying some sort of "interim" system utilizing such traditional means as anti-missile-missile and ground radar stations, supplemented by airborne means of detection and target designation. It is believed that the main goal of such a limited ABM system is to provide cover for the most important sites of the strategic offensive forces within the country's territory.

The American leadership is intent on continually intensifying the pace and amount of work on the SDI program until concrete results are achieved. According to numerous announcements by Washington officials, the likelihood of rejecting this program is discounted both in the research stage as well as in the case of the evolution of the multilayer ABM, should its development prove possible. Leaders in the U.S. military-industrial complex have associated with the program plans not only to build the system, but also to develop other types of offensive weapons and military equipment quickly. In the opinion of a number of American specialists, the technical means thought up within the SDI framework are inherently incapable of serving as an effective offensive strike weapon and of finding application in other areas of military affairs. The

program's imperial bent towards attaining general military and technological superiority over the USSR and the other countries of the socialist community is clearly in evidence here.

In consideration of the program's far-reaching goals, it was assigned a high priority among other weapon development programs and a special directorate was established in the Pentagon to coordinate all its projects. Involved in the work in this area are a number of national directorates and chief commands including the Unified Space Command, service commands as well as the Energy Department, and other agencies and individual organizations. Consortia of the main aerospace firms and research organizations were formed to work in specific areas. It was recommended that frequent use be made of the shuttle spacecraft, which officially belongs to NASA but actually is now used by the Pentagon without restriction.

In line with its scientific-technical potential, the U.S. is trying to attract its NATO allies and Japan into the "Star Wars" program, is putting pressure on all fronts on these countries and is attempting to obtain political approval of its course at the governmental level. However, sensible politicians have expressed concern that with the deployment of such a system, the United States' role in NATO will increase, and with the appearance of an analagous system in the Soviet Union, should an armed conflict erupt, the American command would attempt to limit it to the geographic boundaries of the European TVDs. Besides this, the countries of the West have seen in the U.S. proposals an attempt at the unilateral use of its scientific-technical potential for its own purposes, the result of which would be a "brain drain" and diversion of their own resources. The U.S.'s intention to restrict the transfer of the results of this research and of new technology also does not suit them.

In order to overcome the disagreements which have come up, Washington was quick to assure its allies that the security of Western Europe was inseparable from the security of the U.S. and, in order to peak the Western European countries' interest, proposed to place orders not only for research but also for production of individual components of the system. At the same time, the U.S. agreed to allow participation in certain secret research and offered its assistance in creating a European system to destroy enemy operational-tactical missiles, having included the corresponding developments in the SDI program. As a result of U.S. pressure, Great Britain, the FRG, Italy, Belgium and Portugal have given their support to "Star Wars" at present. The Canadian government refused official participation in the program but decided, however, not to block the enlisting of domestic industrial companies. The Japanese government took an analagous position by expressing its "understanding" of the American goals. France, the Netherlands, Denmark, Norway, Greece and Australia have opposed the program.

The prospects for the construction and practical deployment of a multilayer ABM system with space-based elements are assessed in various ways in the U.S. According to the statements of administration representatives, "real progress" will supposedly be achieved in carrying out the SDI program that would permit a significant cut in the general operational time frame in comparison with the initial schedule. They maintain that these schedules will be determined for the most part by the results of research in directed energy weapons, without

which the building of an effective system to defend against a massed nuclear missile strike would be impossible. Certain American specialists involved in the program express the opinion that the final decision on building combat models of these weapons might be made within five or six years. In general, the system's proponents in the U.S. government and military-industrial complex confirm that its deployment will be realized in the next decade.

In addition, there is a significantly widespread opinion that such a system will turn out, in the final analysis, to be the "21st century Maginot Line." As the Western press notes, the most objective study of all the SDI program was conducted by the American public organization, The Union of Concerned Scientists, which published a special report in March 1984. As a result of careful analysis of the available data, the report's authors, including prominent U.S. physicists, came to the common opinion that building an effective ABM system to protect a country's territory is practically impossible at this stage. The report's main conclusions, as well as other American specialists' reviews of it in the foreign press, state that in the forseeable future there will be no success in building laser and accelerator weapons of sufficient power, in deploying the necessary energy sources, or in arranging for regular production of the most important technical equipment. These scientists believe that the most complex technical tasks are the organization of ABM combat control equipment and the development of the corresponding programs and algorithms. The practical rendition and testing of the combat control system under real conditions could never take place, with the result that any error would produce catastrophic consequences. Due to the necessity of quickly putting the system into operation immediately after detecting a missile launch, control of all resources must be entirely automated. That would significantly limit the human role in decision-making at the most responsible stage and additionally increase the possibility of loss of control and spontaneous malfunctions.

Besides this, the development, deployment and subsequent use of such a system, especially its space components, are associated with not only financial expenses, but also with the expenditure of tremendous human and material resources. In American specialists' estimation, one could compare the SDI program, just in its research stage, to eight Manhattan Projects and that it requires enlisting 40,000 highly-qualified scientists and engineers. In order to deploy the necessary resources in space, the U.S. must develop new powerful booster rockets and carry out hundreds of shuttle launches each year.

It is well known that the present maximum shuttle payload does not exceed 30 tons, that one launch costs 150-250 million dollars and that they plan for 20-24 yearly launches only by the mid-1990s. The January 28, 1986 catastrophy during the launch of the orbital stage of CHALLENGER (the 25th shuttle flight), significantly complicated these plans and once again showed the danger of putting weapons in space and the illusory nature of counting on absolutely flawless operation of space technology.

Judging by Western press reviews, the SDI program has met broad opposition not only from the American, but also the world public. In the U.S. itself, the gloomy prospects of "Star Wars" evoked a sharp split in scientific circles and became the subject of bitter discussion on the problems of ensuring

international security. Thus, 54 Nobel lauriats and more than 700 members of the U.S. National Academy of Sciences signed an appeal to the Administration demanding a halt to the SDI program and more than 1,000 scientists from 39 American universities refused to participate in development of the new convolution in the arms race. Above all, the possible negative consequences of deploying combat anti-missile defense systems worries the progressive public. These consequences include squandering tremendous resources, feverish escalation of the arms race, an increase in tension and a significant decrease in international security.

In American military specialists' opinion, as long as the creation of an ABM system would not in itself solve the problem of complete defense of the U.S. from all types of air-space attack, it inexorably entails execution of other long-term projects. In particular, in conjunction with the SDI program, the Pentagon is already nurturing plans to completely modernize the ABM system of the North American continent, the cost of which, as the specialists suggest, could be even around 50 billion dollars. These plans, which call for the wide envolvement of Canada as a partner in joint air-space defense of North American (NORAD), were discussed at the meeting between the U.S. President and the Canadian Prime Minister, M. Mulroney in March 1985.

Continuation of work on SDI will lead, they believe, to a complete loss of perspective in achieving mutual trust, to a disruption of the established strategic balance and a rejection of restraint in the development of strategic offensive weapons. The chief goal of both countries is to accumulate these weapons up to a level that would assure the capability to overcome defensive systems. The opinion is also expressed that even the beginning of deployment of this system could provoke a conflict in that neither side would want to passively watch the deployment of a strike weapon over its territory that has great destructive power. The first most likely casualty of Washington's space plans, they expect, could be the arms limitation process, including one of the most important elements of this process, the Soviet-American agreement on limitation of antimissile defense systems of 26 May 1972.

It is well known that this agreement contains provisions banning both countries from creating the basis of territorial ABMs, the development of ABM components outside the boundaries of the permitted restricted geographic regions, transfer of technology and deployment of such systems on the territory of other countries. The creation, testing, and deployment of sea, air, space and mobile ground systems is also banned, and limitations on the development of an anti-missile weapon, based on new physical principles, was also put in. On the whole, the spirit and letter of the agreement attest that it was based on an expectation of the parties' refusal to deploy any large-scale ABM system as one of the essential factors in the cause of restraining the race in strategic offensive weapons.

The research and the ultimate goals of the SDI program fly in the face of the previously mentioned provisions of the agreement, which has been repeatedly reported in the foreign press. The incompatability of "Star Wars" with the agreement's obligations is obvious. However, the White House is attempting to distort the essence of the matter, trying through "word games" or the arbitrary introduction of amendments to the sense of the agreement to prove

the legality of research and testing going on in the U.S.

The Soviet Union firmly adheres to the agreements and consistently favors prevention of the militarization of space, opposes deployment of a new strike weapon in space under the guise of a defensive system. The White House's assertion of its desire to strengthen international security by moving to possession of such a weapon can lead no one astray. "Star Wars" cannot be viewed as anything other than an attempt by the U.S. to increase its offensive potential, disrupt the strategic balance and create the conditions for constant armed blackmail against the Soviet Union and other countries, as well as for an unanswered nuclear attack. However, Washington underestimates the Soviet Union's potential to prevent an American monopoly in space. At a press conference in Geneva, M. S. Gorbachev announced with great openness, that the response to the U.S. actions "will be effective, less costly and may be carried out in a shorter period."

The arms race and the development of military technology on the whole has now reached a critical level, beyond which the situation could become uncontrollable. The American plans to saturate space with strike weapons was roundly criticized by the Soviet Union, but not out of fear as some in the West put it. Its position on this question is based on the firm conviction that a total ban on such a weapon would exert a profound positive influence on the entire nuclear arms limitations process and is a firm basis for strategic stability and international security. Recognizing its lofty responsibility for the fate of the world, the Soviet government called upon the U.S. administration to begin to destroy nuclear weapons instead of creating weapons supposedly designed to counteract them.

The chief obstacle on the road to the peaceful opening of space by the forces of all mankind are the plans to conduct "Star Wars" and programs for the U.S. to further accumulate strategic nuclear and conventional weapons. Under these conditions, a special responsibility for the Motherland's defensive potential, defense of the gains of socialism and protection of the peaceful labor of our people lies upon the Soviet Armed Forces. As was emphasized in the 27th CPSU Congress, they must show great vigilence, be in constant readiness to stop imperialism's hostile intrigues against the USSR and its allies, and to give a rebuke to any aggressor from whereever he may come.

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SDI AND SPACE ARMS

SOVIET MILITARY JOURNAL ON U.S. DEVELOPMENT OF RAIL GUN

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 86 (Signed to press 11 May 86) pp 19-22

[Article by Col A. Lomov, Doctor of Technical Sciences, and T. Arinin; "The Military Use of Electromagnetic Accelerators"]

[Text] Efforts by the agressive ruling circles of the U.S. and the NATO bloc to achieve military superiority over the Soviet Union and the countries of the Warsaw Treaty have led to the search for new principles in creating weapon systems and military technology. Western specialists believe the use of electromagnetic accelerators (EA) which, in their opinion, can be used for several weapons systems, is one trend that started out theoretical but has now brought about the practical materialization of these ideas.

The foreign press reports that efforts to use EAs to project different kinds of bodies were made back in the early twentieth century. The first patent for an electromagnetic gun was issued in 1901. After the First World War, research in this area was conducted in France and the U.S., but during the Second World War, specialists in Germany and Japan also engaged in it.

However, foreign specialists came up with practical designs for them only in the late 1970s. Success in development in this area depends, in particular, on the level of achievements made in electronics. First of all, it was necessary to have small-sized energy storage and supply devices as well as heavy-duty current switching systems with heavy-use reliability. The appearance of unipolar generators, magnetic flux compression generators and compressor units has made it possible to create the first experimental models of EAs for military use. The superiority of an EA over artillery ordnance, for example, lies in the fact that they are more efficient and have a higher projectile delivery velocity.

Judging from reports in the foreign press, the theoretical and experimental results of scientific research into EAs have expanded the possible spectrum of their military use. Hence, at the present time, prospects look good for creating electromagnetic guns to strike gound and air targets, including space objects (satellites and ICBMs). Furthermore, they can be used as launching boosters for missiles and torpedoes, as well as the direct means to launch objects into space, as catapults to decrease the distance in launching

aircraft off aircraft carriers, and as boosters to deliver material supplies into forward positions.

Foreign specialists have had the best results in developing so-called electromagnetic rail guns. This term comes from the mechanical guides or rails, along which, under electromagnetic force, the launched body or projectile moves. The basic elements of this gun are the current guides (most often, electrically-isolated copper ones), an energy supply, a feeder source, and a projectile.

In the foreignb press, a body "fired" by an electromagnetic gun is called a projectile or an inert munition. Most frequently it is a cube that functions as a dielectric or a thin-walled cylinder that does not contain an explosive. However, certain common projectiles can be used that can slide along the guides on a special baseplate.

The operating principle of an electromagnetic gun is as follows: (Fig. 1) The current runs along a single mechanical guide and then through a fusible armature located on the projectile base. The circuit is completed through a second guide. The current flowing through the circuit forms a magnetic field which ejects the projectile. The current in electromagnetic guns has on the order of millions of amperes, so the base portion of the projectile forms a plasmic arc on which a magnetic field operates. It has been noted that in contrast to common artillery ordnance which use powder charges, the acceleration of the projectile, when it passes through the barrel of an electromagnetic gun, can remain a fixed quantity, even though changes in the strength of the current can be regulated.

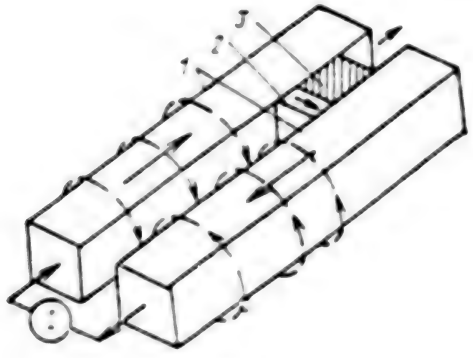

Figure 1: Diagram of the Operating Principle for a Railed Electromagnetic Gun.

1. Guides, 2. Plasma armature, 3. Projectile.

The first experimental foreign electromagnetic gun was created in the early 1970s at the National University of Australia (in Canberra). It had a barrel 5 m long and ejected plastic cubes weighing 3 grams at a velocity of 6 km/sec with an acceleration of 0.3×10^6. To do this, the gun used as an energy

storage device, a unipolar generator (the height of a two-story house), built initially to study high energy physics. It achieved a maximum energy of 1.6 megaamperes and an energy capacity of 500 megajoules.

The research which started in Australia was continued in the Livermore and Los Alamos scientific research laboratories in the U.S. Laboratory models of two variants of the rail gun were created: one with a small square barrel (1.27 cm side-to-side) to project a projectile weighing 3 grams in a vacuum and one with a larger diameter (5 cm) to eject a projectile weighting 165 grams in atmosphere.

In experiments with the small-barreled gun model (1.8 m long), the following results were obtained: a launch velocity of 10.1 km/sec and an accelleration of 8.4×10^6. The gun used a magnetic flux compression generator as an energy storage device which was developed through a joint program by the American laboratories cited above. Its operating principle involves stimulating a magnetic current between flat copper conductors. A strip of explosive is laid on one conductor. After it goes off, the conductors come closer together, compressing the magnetic flux. A 16 kW generator generates an impulse (0.4 msec) with a current strength of 0.95 magaamperes. The foreign press reports that while the tests were being carried out on the first electromagnetic guns, the walls of the barrel and the surface of the guides suffered quite a bit from the effects of the plasmic arc and the magnetic field. The "projectile" fragmented and scattered in all directions upon firing.

The model of the gun with the larger barrel was intended for multiple use. However, after firing, its barrel fell apart completely.

The Western press reports that at the present time, substantive progress has been made in the field of developing electromagnetic guns. Prior to 1983, it was believed that EAs could only be used in creating weapon types with established practical utility, since it was believed that projectile velocities could not exceed 3 km/sec in atmosphere. Now foreign specialists assert that with electromagnetic guns it is possible to "shoot" projectiles with velocities on the order of 100 km/sec and destroy ballistic missiles during any stage of their trajectory. In their opinion, for example, an electromagnetic gun is capable of creating, at a range of 2,000 km using inert munitions having a flight velocity of more than 10-20 km/sec, a higher energy density per unit area than other planned future kinds of weapons, including laser and nuclear munitions (25 KT yield). Such an electromagnetic gun is being developed at the present time with the support of those in charge of planning the future scientific research activities of the U.S. Department of Defense.

In the course of experimental research in a vacuum chamber which imitates space, projectile flight velocities have been reached on the order of 8 km/sec and an efficiency coefficient that transforms electric energy into magnetic energy of 40 per cent. Judging from reports in the Western press, the speed-up in work being conducted in the U.S. to create electromagnetic accelerators is explained basically by the possibility of their being used in space. American specialists, based on recent achievements, assert that the ground-testing of systems place to be based in space, are possible within the next 5 to 6 years.

Hence, at the present time, the Livermoore and Los Alamos laboratories are developing new variants of electromagnetic guns using guides made of such materials as wolfram, copper with wolfram shielding, and copper alloys with wolfram. A search is also being made for new dielectrics, and high-power generators are being designed. For a space-based electromagnetic gun, Westinghouse has created an energy source based on a nuclear reactor to feed the turbine of a unipolar generator.

The U.S. is currently investigating the possibility of using railed electromagnetic guns to launch various kinds of bodies into space. A launch body form with an ablation cover has already been tested out. The weight, velocity, and necessary energy have been theoretically worked out. Foreign publications have expressed the opinion, that such a launch becoming a reality depends upon the relationship of the aerodynamic characteristics of the projectile and the coefficient of atmosphere resistance. Calculations have shown that with a lot of aerodynamic resistance (a hemispherical nose section), a projectile weighing 100 kg will need a lauch velocity on the order of 28 km/sec and an energy of 39 gigajoules to achieve initial velocity in space. With small resistance and the projectile aerodynamically stablized (weight 4 kg), it will take a launch velocity of 9.5 km/sec and an energy of 0.18 gigajoules to achieve initial velocity in space, and 14.8 km/sec and an energy of 0.44 gigajoules to achieve secondary velocity in space. The need for low resistance has led to an investigation of the possibility of launching a projectile with empennage and base plate from an electromagnetic gun (with a square-shaped barrel). The foreign press reports that in designing the launcher, the developers are trying to decrease its length, but this means increasing the force of the current and acceleration as well as the pressure on the projectile and base plate (if one is necessary). A growth in the force of the current results in an increase in the dimensions and weight of the barrel as well as the energy used for launching.

A second operational principle also exists for the EA which Western specialists are studying. It allows one to sub-stantially lower the pressure on the walls of the barrel, and, consequently, decrease the weight of the electromagnetic gun. Such accelerators are sometimes called coaxial accelerators or accelerators of large mass bodies. The operating principle of the coaxial accelerator is based on the interaction of the electromagnetic field created by stationary drive coils with the projectile. The latter is a complete cylinder which also has coils. Figure 3 depicts the simplest kind of coaxial accelerator with collector brushes, the barrel of which forms a spiral made of square copper wire. The cylinder can have one or more coils that run either inside or outside the shaft.

The coaxial accelerator is a variation on a linear synchronized motor like that used, for example, in railway transportation (a train on a magnetic bedding). The advantages of coaxial accelerators with collector brushes, in foreign experts' opinion, are the simplicity of their design, their rather high efficiency coefficient, and their reliability. Their drawbacks are the rapid wear of the brushes and their ability to oeprate only at velocities on the order of 1 km/sec.

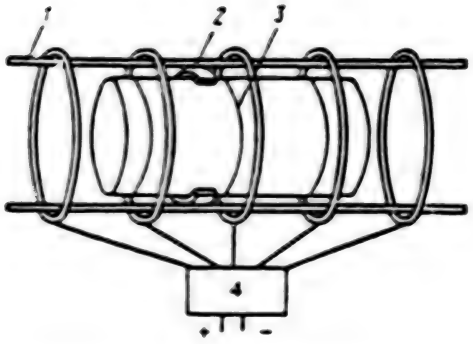

Figure 3. A Diagram of the Elements of One Variant of a Coaxial Accelerator: 1. Feeder bus, 2. Collector, 3. Cylinder coil, 4. Switching system.

It is believed that coaxial accelerators with collector brushes can be used to accelerate bodies of large mass with relatively low velocities.

An experimental model of a coaxial launcher was built at the Massachusetts Institute of Technology. It can be used to launch a remotely controlled glider. The launching mechanism itself (Fig. 4) is 6 meters long, including the feeder source, and is mounted on a motor vehicle. It is intended to launch gliders (weighing about 25 kg) with a velocity of up to 100 meters per second and a load factor of 100.

Figure 4. Launcher for a Remotely Controlled Glider

This device looks practically like a mass-produced DC current electric motor with a non-armature core that commutates using common collector brushes attached to a moving cylinder, which, incontrast to a projectile, does not leave the accelerator. The cylinder is built in such a way that it can move inside or outside the spiral guides which serve as a stator. Using the brushes

located on the moving cylinder, a certain portion of the guides are fed and a constant maximum drag is supplied in moving the cylinder along the guides. It is reported that the accelerator's efficiency coefficient exceeds 50 per cent. The energy not used during launch returns to an energy storage capacitor and can be used again during the next launch. Furthermore, between launches it is necessary to recharge the capacitor to the proper level.

The coaxial accelerator can also be used to create electromagnetic guns. One design variation, for example, is the so-called theta-gun which shoots tubular projectiles. The induction coils are synchronized with the movement of the projectile. The active force adheres to the side surface of the entire length of the projectile. Stability in flight is assured through rotation. The demands for simplicity in this design are much less than those for railed electromagnetic guns. The foreign press has publicized two possible variants: in one, induction coils from the barrel, on the inside of which a copper projectile slides along a grooved rod that weakly conducts a current (Fig. 5). In the other variant, the rod is replaced with a second set of acceleration coils located inside the projectile. The inside and outside coils are turned on simultaneously, thereby offsetting the pressure on the projectile.

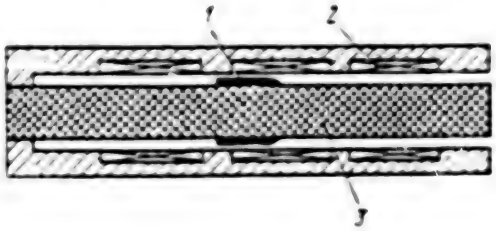

Figure 5: A Diagram of the Principle of a THETA-GUN
1. Projectile, 2. Drive coils, 3. Threaded rod.

In foreign specialists' opinion, the theta-gun, in comparison to the railed electromagnetic gun has the advantages of having increase armor penetrability, greater simplicity with a cylindrical barrel, no need for baseplate, and the assurance that the projectile will rotate. The stability of tubular projectiles in flight has been determined by firing them from regular ordnance. It is intended that the theta-gun will be used to protect the launching positions of intercontinental ballistic missiles, to combat planes and cruise missiles, and as an anti-tank weapon.

Western experts believe that EAs can be used to launch planes from the decks of aircraft carriers. The simplest realization of this method, in their view, is based on using a linear asynchronous electric motor, like that used to start motor vehicles (weighing up to 9 tons) when they are being tested. It is reported that a velocity of 48 m/sec can be achieved in 10 seconds. American specialists assert that the speed it takes for a plane to take off should be approximately two times greater and the time for take-off should be from 2 to 5 seconds. If one figures that the weight of an airplane is almost four times that of a motor vehicle, then the drag forces on the engine ought to be 30 times greater. In their opinion, the corresponding increase in power, and

consequently, engine weight will complicate its deployment on deck. So a specially designed DC linear motor activated by fixed magnets has been envisioned. The plane will be launched by a driving mechanism made of four traction motors and a system of pulleys which pull flexible steel wire ropes. Preliminary calculations show that the length of the launching deck is about 100 m; the weight of the plane, 36 tons; the break-away speed, 85 m/sec; and acceleration g-load, 4.

The foreign press also reports the possibility of using electromagnetic guns as a way of protecting ships (from planes and anti-ship missiles) as well as ground force tank, anti-aircraft, and artillery weapons. Furthermore, at the present time, American specialists are making big efforts to develop space-based electromagnetic guns, which ought to become a component part of wide-scale anti-missile defense with space-based elements built in accordance with the so-called "strategic defense initiative." Even though work in this area is still in the stage of theoretical calculations and experimental research where different kinds of laboratory experiments are being conducted, it is nonetheless witness to the efforts of the U.S. military and political leadership to obtain new-in-principle kinds of weaponry for the purpose of achieving military superiority over the Soviet Union. The position of our state regarding this issue is clearly laid out in the Program of the CPSU, where it is emphasized that the Soviet Union is consistently "striving to limit and constrict the scope of military preparations, particularly those connected with weapons of mass destruction. First and foremost, this scope should fully exclude space, so that it does not become an arena of military rivalry, a source of death and destruction."

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SDI AND SPACE ARMS

SOVIET MILITARY JOURNAL ON U.S. OVERHEAD RECONNAISSANCE EQUIPMENT

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 86 (Signed to press 11 May 86) pp 41-45

[Article by Col N. Gabrilov, Candidate of Military Sciences; "U.S. Overhead Reconnaissance Equipment"]

[Text] Landscape reconnaissance systems have been widely developed among the various types of American space reconnaissance systems.(1) Their special-purpose equipment represents the integration of observation information collection and recording units for subsequent transmission to their consumers. Judging by foreign press reports, the development of this system has proceeded in the direction of expanding the band of the electromagnetic spectrum, in which observations are conducted, and the introduction of information collection systems, operating on new physical principles. Currently observation systems are being used, which function in both the optical band and in the radio frequency band. Electro-optical systems in the form of scanning radiometers with linear matrices are among the optical wave band systems being developed which have been deployed along with aerial cameras (AFAs). In addition, direct viewing systems with linear matrices are being developed. Limited use of traditional television observation systems continues. Microwave radiometers are used in the radio frequency band, and synthetic aperture radars are also being improved. The potential to equip spacecraft with systems, operating on the scattermeter principle (bistatic radars and correspondingly, scattermeters), is being investigated.

Information on special-purpose landscape reconnaissance systems, installed on American spacecraft, and their development is presented below.

In essence, by the middle of the 1970s, aerial cameras were the main means of observation from reconnaissance spacecraft in the U.S. Achievements in the realm of long-focal AFAs, having a linear resolution of approximately 40 lines/mm, were the basis of their development. The subsequent development of photo systems proceeded in the direction of improving the entire landscape information receiving process, beginning with the adoption of indirect measures to increase the contrast of reconnaissance targets by introducing spectrozonal and zonal photography, and ending with the development of image processing and analysis systems. However, as the Western press notes, camera lenses and photographic film were open to significant improvement.

Linear lenses with a focal length on the order of 1-2 m were used on the first types of space cameras, which were intended for conducting survey reconnaissance. Their resolution was almost up to the theoretical limit (up to 90 per cent) due to the introduction of machine analysis methods, the improvement in design and the manufacturing technology of individual design elements, and the introduction of compensation devices. For example, the development of a lens for a high altitude camera with an field-of-view angle of 1 degree was reported. Its linear resolution on the 0.5 micrometer (mkm) wave length was 450 lines/mm (the resolution diffraction limit at this wave length is 500 lines/mm), and the entire "film-optic" system was 180 lines/mm. For the medium-length focal series of lenses on space cameras, a resolution of 110-135 lines/mm was achieved.

To improve the lenses, it was considered important to switch to reflective designs with a large focal length. The first reflective lenses with a focal length of 1-6 m appeared at the end of the 1970s, and in that same period, work commenced on the development of lenses with a focal length of 18-20 m. Presently, four main configurations are the most widely deployed in the design of reflective lenses: Cassegrain, Schmidt, Schmidt-Cassegrain, and a composite catadioptic lens. In Cassegrain-designed lenses the primary mirror is parabolic and the secondary mirror has a hyperbolic configuration. They are distinguished by a small aperture ratio and a small field-of-view angle (up to 2 degrees). Narrow films (most often with a width of 70 mm) are used in cameras with such lenses. The lenses, developed on the Cassegrain design, are the most compact of all existing designs. In practice, reflective elements are usually combined with linear designs, forming the so-called catadioptic (linear-reflective) lenses. As a whole, Cassegrain-type lenses are used in spectrozonal systems, since they do not produce spherical aberrations.(2)

Schmidt lenses have a spherical mirror and a correction plate which extends forward (Fig. 1). Large field-of-view angles (up to 10 degrees) and aperture ratios are considered to be the merits of such lenses. They are free from spot (3) and astigmatic (4) type distortions, and easily permit their elimination using special correction devices. At the same time, lenses of this type possess a spherical aberration and have large dimensions (the length is almost twice the focal length). In particular, a space telescope for the early launch detection of ballistic missiles was developed using the Schmidt design.

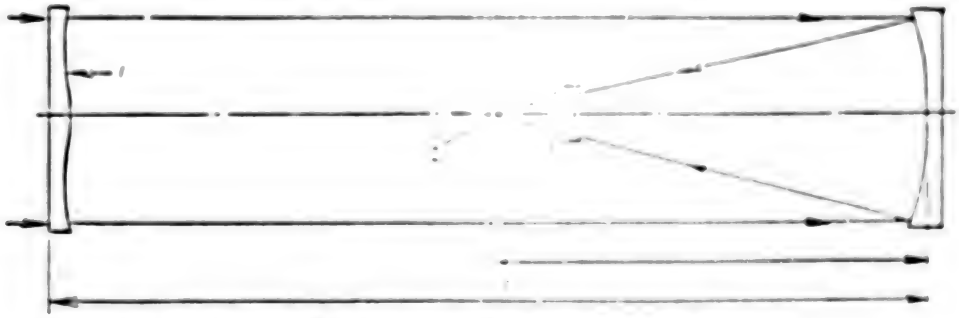

Figure 1. Schmidt Lens Schematic.

1. Corrective plate; 2. Focal plane; 3. Corrector focal plane; 4. Primary mirror; 5. Focal Distance; 6. Overall length (two focal lengths).

In Schmidt-Cassegrain type lenses, the primary mirror is spherical or parabolic. They have an optimum aperture ratio and comparatively large field-of-view angles. American experts consider it possible to develop lenses with a field-of-view angle of more than 4 degress for photo systems, employed for photography at an altitude of approximately 150 km, and to use 13-cm wide film.

Catadioptic (linear-mirror) lenses are used both in photographic, and in electro-optical systems. They have a comparatively large field-of-view angle, inherent with a linear lens, and a significant focal length. The presence of aspherical elements in their design is a deficiency of catadioptic lenses, and from a optic-mechanical view point, these lenses are significantly more complicted than linear lenses.

The relatively light weight and small dimensions (besides the lenses, operating on the Schmidt principle) are considered to be important merits of reflective lenses, developed according to the schematic mentioned above. For example, the weight and length of catadioptic lenses with a focal length of 1.6-1.8 m are almost 5 and 3 times less, respectively, than with similar linear lenses. As a result, the static linear resolution of a reflective lens is 30 per cent greater. The comparative characteristics of representative types of reflective and linear lenses are presented in Table 1.

TABLE 1

COMPARATIVE CHARACTERISTICS OF REPRESENTATIVE TYPES OF REFLECTIVE AND LINEAR LENSES

CHARACTERISTICS	REFLECTIVE LENS	LINEAR LENS
Total length, (mm)	792	2,108
Focal length (mm)	1,829	1,676
Aperture opening diameter (mm)	495	419
Aperture opening surface (mm)	1,541	1,280
Aperture ratio	4.7	4
Field-of-view (deg)	2	6
Glass component weight (kg)	38.1	122.5
Total lens weight (kg)	136	363
Static linear resolution, lines/mm (film 3414, contrast 2:1, W-12 filter)	170	120
Static angular resolution (mrad)	3.2	5

The foreign press notes, that the introduction of scanning systems with a wide spectral wave band into reconnaissance equipment makes the development of reflective optics possible, since reflective lenses do not introduce chromatic

aberrations.(5) Correction devices for geometric distortions, resulting from the inaccuracy in the filling-out of the mirror shape, are also relatively easy to use in them. Depending upon the required degree of correction, mirrors can have either a comparatively simple spherical design or a complex higher-order spherical shape. In the future as U.S. calculations indicate, the improvement in reflective optics, which in particular is connected with an increase in the orbital observation altitude (up to a stationary orbit), will lead to the use of lenses with a focal lenth on the order of tens of meters and with a mirror diameter on the order of several meters. It is reported, that the use of light-weight modular-designed mirrors and mirrors with a guided deformity of their surface will characterize such lenses. They think that distortions in them, connected with mechanical and temperature factors, will be able to be eliminated in real-time. Special adaptive devices (adaptive optics), capable of partially compensating for turbulent disturbances and eliminating the detrimental effects of other factors, reducing the resolution of optics, are being developed for large-sized modular-designed lenses.

According to foreign press reports, the film used in space cameras, and their improvement appears to be following advantageously in three directions: the speed is being increased without increasing (and sometimes even reducing) the grain size; special so-called "anti-camouflage" films are being developed; IR film, intended for the photography of small-contrast targets and for operating at low light levels are being improved. Presently more than 25 types of film for air and space reconnaissance, covering the frequency band from 0.3-0.9 mkm, is widely used and being developed in the U.S. According to American specialists' opinions, the film characteristics have reached their maximum values. Thus, superhigh resolution film has a resolution of 800-840 lines/mm with a contrast of 1,000:1 and 250-280 lines/mm with a contrast of 2:1. High speed panoramic films have the same contrast values with a resolution of 200 lines/mm, and IR and special spectrozonal films (with a output image in light conditions)-- up to 70 lines/mm (Table 2).

TABLE 2
CHARACTERISTICS OF SEVERAL U.S. FILMS
USED IN SPACECRAFT

FILM DESIGNATION	SPECTRAL BAND (MKM)	GRAIN INDICATOR	RESOLUTION LINES/MM W I T H	
CONTRASTS			1.6:1	1000:1
2376	.	.	63	160
3410	.	11	80	250
3412	up to 0.7	9	125	400
3414	.	8	250	800
5069-5460	.	.	180	400
SO-115	.	.	115	250
SO-415	.	.	441	800

It is considered that in spite of the trend to replace aerial photography systems with electro-optical systems in space reconnaissance, the use of film has a number of advantages. In particular, systems with the image displayed on film provide a greater order of information than similar non-film optical systems, and the dynamic resolution characteristics for film displays of equivalent size are two times better, than with "vidicon" type television tubes and photodiode matri ces.

As a whole, U.S. experts note the following merits of photographic systems: high spacial resolution, the metric accuracy and informativeness, the relative ease and rapid deciphering of the collected information, the relatively small cost, the compactness of the information recorder, reconnaissance documentation for repeated use and also the longevity of the saved information. At the same time, they have characteristic deficiencies such as the necessity to obtain information when there is a break in the cloud cover and slight illumination of the earth's surface, the delay in the delivery of information to the consumer, the relative complexity of the device converting the image into electromagnetic signals.

Electro-optical systems, which have already been used on the KH-11 and LANDSAT satellites, have been widely developed as reconnaissance systems for the past 7-10 years in the U.S. They are different from film systems in that electro-optical systems have a collection of lines or mosaic matrices or photoelements in the focal plane. The comparative ease of conducting spectrozonal observations, including in many parts of the IR spectrum, is a characterisitc feature of electro-optical systems. It allows objects to be easily distinguished against the terrain background, camouflage to be revealed and supplementary information on the reconnoitered target to be obtained.

The use of instrument display units with a charge couple and a digital read-out system, and a real-time data image transition system are other features of electro-optical observation systems. This promotes the wide introduction of computers in such systems for forming and correcting the images received on the ground. According to Western press reports, algorithms for forming images are being developed and used in the U.S., which simultaneously provide the capability to correct geometric distortions and to a great extent, to increase the contrast, to enhance the definition of target outlines and also to compensate for distortion caused by the atmosphere.

According to American military experts' opinions, the introduction of machine methods for forming images allows limitations, imposed by the atmosphere on the resolution of photographic systems, to be reduced. It is reported in particular, that images from the LANDSAT satellite, received using a low resolution spectrozonal system, provides the same volume of information as high resolution images. As U.S. experts believe, in the future, the development of optical observation systems will follow the course of perfecting electro-optical systems, spectral reconnaissance methods, digital systems for transmitting information to the ground and their machine processing by computer.

Side-looking synthetic aperture radars are considered to be an important type of landscape reconnaissance system, although they are not widely employed. The prototypes of such radars are currently undergoing an experimental check and trials under natural conditions for the purpose of assessing their effectiveness as an all-weather reconnaissance system in naval or ground TVDs.

The foreign press notes that two radars have already been tested; the SAR (on the SEASAT satellite) and the SIR-A (on the space Shuttle). During their assessment, the information from the images, received using these radars, was compared both between them, and with the images on photographs from the LANDSAT satellite. Analysis of the images showed, that each of the studied photographs contained additional information characteristic only to them, but that the information of the images from both radars in observing terrain relief and the ocean surface were the same, in spite of the two-fold difference in their resolution. It was reported that the SIR-A radar had an increased resolution due to the use of a large polar diagram inclination angle. The comparative characteristics of these radars are presented in Table 3.

TABLE 3.

COMPARATIVE CHARACTERISTICS OF THE SIR-A AND SAR RADARS

CHARACTERISTICS	SIR	SAR
Employment altitude (km)	260	795
Carrier frequency (MHz)	1278	1275
Impulse length (mks)	30.4	33.4
Return impulse frequency (GHz)	1464-1824	1463-1640
Bandwidth (MHz)	6	19
Transmitter impulse power (MWt)	1	1
Antenna dimensions (m)	9.4 x 2.16	10.7 x 2.16
Polar diagram incidence angle (deg)	50	23
Terrain resolution (m)	40 x 40	25 x 25
Observation data recording method	in orbit, optical	on the ground in digital form

The field-of-view width of modern side-viewing radars reaches 100-125 km. U.S. specialists believe that radars with a field-of-view width up to 250 km and a resolution of several meters can be developed by 1990. The development of wide-band and multi-channel radars, operating with various polarization combinations of the radiated and received signals, is considered to be the future direction in the development of reconnaissance radars. Currently, mainly radars in the decimetric wave band are being investigated for reconnaissance purposes.

Judging by foreign press reports, the capability to operate in various modes is a characteristic design feature of several experimental space-based radars: scattermeters (non-coherent radars) and microwave radiometers (passive

radars). It is planned to use separated (bistatic) radars, in which the terrain illumination device and the receiver for the reflected signals are installed on various objects (for example, the transmitter on one spacecraft and the receiver on another, or on an aircraft). It is considered, that a similar design principle for a reconnaissance system reduces its vulnerability and increases its jam-resistance.

As the Western press notes, work on the "Star Wars" program, the ominous plans of the present U.S. administration to militarize space and transform it into a new zone of combat operations in which an important role is played by space reconnaissance systems, is exerting a large influence on the subsequent near-term development of reconnaissance equipment on spacecraft. According to the NASA LUNETTA program, it is planned to launch light-weight constructed mirrors, having a diameter of 100 m, into stationary orbit. Each such mirror can reflect the sun's energy on a surface having a diameter of 350 km, creating an illumination on it greater than a half moon. Although this project was created for illuminating towns and highways, nevertheless it is considered that the developed systems can be used for conducting night time reconnaissance. For the reconnaissance of natural resources, it is planned to use a space-based antenna system several hundred meters in size, which can receive images in the radio band with a terrain resolution better than 1 m.

The development of large-size, small-mass optical systems for observation from a stationary orbit is being carried out within the framework of the Defense Department's HALO (High Altitude Large Optics) program. Accordingly, it is planned to develop so-called light-weight constructed adaptive optical devices (mirrors), matrix devices with 10^6 - 10^7 elements, onboard processors, controlled filters and cyrogenic techniques.

A multipurpose space-based radar is being developed by Grumman for the purpose of developing a universal radar for detecting combat aircraft, ships, and cruise and ballistic missiles from space. Several possible radar variants are being considered. One of them envisions the use of antennas formed out of light-weight, thin materials with another based on the use of a modular-type antenna grill, where each antenna element is formed from an integral miniature transceiver. According to U.S. specialists' opinions, such radars will be able to detect small-sized targets (tanks and small-displacment ships) from orbit (2,000-10,000 km altitude) and also to conduct thourough engineering reconnaissance of the terrain.

1. For greater detail on space reconnaissance systems see: ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No. 11, 1984, pp. 55-58.

2. A spherical aberration is a distortion of the image, occurring when the image of the point, lying on the system's main optical axis, has a type of circular scattering.

3. A spot is a distortion of the image. It occurs with the passage of wide light beams through the optical system from the points of an object, located some distance from the system's main optical axis. The image of these points has a type of extending and non-isochronous illuminated spot.

4. An astigmatism is a distortion of the image, existing when the image of an illuminated point, in general has a type of eliptically shaped spot, which on several positions of the image plane, degenerates into a direct sector or circle.

5. A chromatic aberration is a defect in the optical system connected with the dependence of the transparency medium's refractive index on the length of the light wave. As a result of a chromatic aberration, the image is washed out and its edge is blurred.

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SDI AND SPACE ARMS

SOVIET JOURNAL DISCUSSES FRG ROLE IN SDI

Moscow MIROVAYA EKONOMIKA I MEZHDUNARODNYYE OTNOSHENIYA in Russian No 8, Aug 86 (signed to press 16 Jul 86) pp 111-114

[Article by S. Sokolskiy: "The FRG and SDI"]

[Text] On 27 March 1986 U.S. Defense Secretary C. Weinberger and FRG Economics Minister M. Bangemann signed in Washington agreements regulating FRG participation in the American SDI research. So, in the wake of London the FRG Government officially subscribed to the "star wars" program being developed and implemented by the U.S. military-industrial complex.

Two documents were signed. In the "Joint Agreement in Principle Between the FRG Government and the U.S. Government"("Agreement in Principle") the partners declare their aspiration "to promote, given observance of security interests, the free exchange of goods, scientific information and technology between the two countries" (article 2). The second document is the "Agreement on the Participation by German Firms, Research Institutions and Other Authorities in Research Connected With the Strategic Defense Initiative" (SDI Treaty). Appended to the agreements are letters exchanged on 17 and 27 March 1986 by U.S. Assistant Defense Secretary R. Perle and L. (Shomerus), head of a epartment of the FRG Economics Ministry (both headed their countries' delegations at the preliminary negotiations). They concern increased control over West German exports. In addition, there is also a letter from M. Bangemann to C. Weinberger on the creation of a special coordinating body and two letters from Weinberger to Bangemann on "assistance" to West Berlin firms and the rights of the FRG Defense Ministry.

The agreements were concluded as secret agreements, and their publication was not intended.[1] According to press reports, the H. Kohl cabinet did not familiarize even the majority of Bundestag members with them. It is also highly significant that the form of intergovernmental agreements was imparted to the two documents, as a result of which they do not require ratification.

However, on 18 April 1986 the full texts of the agreements were published by the Cologne EXPRESS newspaper and reprinted the following day by FRANKFURTER RUNDSCHAU. The correspondence between R. Perle and L. (Shomerus) was made public 2 days later. With negligible cuts it was published by the well-known weekly DER SPIEGEL.[2]

Attempting to calm public opinion, Bonn propaganda resorted to a variety of maneuvers. It was claimed, for example, that the participation by FRG firms and research institutions would not be of a military nature and that the government would not aspire to participation in the SDI on a state basis. It was also declared that the agreements were designed primarily to facilitate West German firms' access to advanced American technology and ensure their "equality" and the possibility of deriving from the cooperation with the United States S&T benefits for civil production.

The publication of the texts of the documents refutes such soothing assurances.

First of all, the agreements are of a clearly expressed military-political nature. With their help the FRG is being plainly and directly enlisted in realization of the American "star wars" project. It will become an active participant in the Pentagon's military programs pertaining to the development of space-based weapons and will thereby contribute to the extremely dangerous spread of the arms race to space.

The agreements define the political, military, economic and legal framework of the inclusion of the FRG's industrial and S&T potential in the American SDI research. The purposes and principles of the technological cooperation outlined therein mean not only Bonn's actual recognition of the military nature of such research. They testify to the FRG Government's endeavor to impart a material basis to the participation of West German firms, institutions and other establishments therein. Thus citing FRG Government statements of 27 March, 18 April and 18 December 1985 on political, economic and moral support for the American project,[3] in article 1 of the SDI Treaty the parties express "joint interest in the creation of a broad basis for the possibly more all-embracing participation of German (West German--S.S.) firms, research institutions and other authorities" which would care to associate themselves with the SDI.

The subject of this agreement is regulation of the specific sphere of military cooperation between the FRG and the United States. It is essentially a question of a military treaty. This is also set off by the fact that the agreement was signed by the head of the Pentagon, references to other agreements between the partners in the military sphere (articles 3.2.2-3.2.5) and also the particular functions which are assigned the U.S. defense secretary (article 7.2 and article 9). The fact that the treaty is authenticated for the FRG's part by the signature of the economics minister is in this case of no essential significance since this was done manifestly for concealment purposes.[4]

The "German (joint-stock) companies, firms, research institutions or other authorities" (article 2 and article 4.7) with which the treaty entrusts specific participation in the SDI thereby operate in compliance with the international-treaty obligations assumed by the FRG as a state. It is significant in this connection that the "German participation" concept employed in the wording of the treaty (article 4.7) incorporates together with "companies, firms and research institutions" the completely unspecified "other authorities". The entirely realistic possibility of the enlistment in SDI research of FRG

official authorities like, for example, Bundeswehr command authorities also is thereby created. It is important to mention this particularly with regard for the fact that there is no clear-cut line between the scientific research stage and the practical realization of the militarization of space, and the very "SDI research program" concept permits a very broad interpretation.

As became known, the FRG Economics Ministry will assume a coordinating function pertaining to the SDI Treaty in respect of other departments (ministries of foreign affairs, defense and research and technology) and will obtain information directly from the Pentagon.[5] Inasmuch, however, as formally the spheres of the competence of individual departments are clearly delimited and none of them can interfere in the affairs of another, the foundation is thereby laid for direct contacts between the defense departments of the United States and the FRG on all questions connected with the SDI. In addition, as C. Weinberger demanded, article 9 of the SDI Treaty clearly says that "recognizing joint security interests and for the purpose of facilitating the effective implementation of this agreement, the U.S. Defense Department and the FRG Defense Ministry will mutually exchange information in spheres of SDI research agreed by both sides."

In addition, the partners agreed on an exchange of knowhow in the fields of research "which... they deem useful for an improvement in conventional defense, air defense particularly" (article 9). This provision essentially makes it possible to supplement the SDI with the so-called "European Defense Initiative" (EDI), which is being propagandized in every possible way by Defense Minister M. Woerner. The interconnection between the SDI and the EDI, still denied by the FRG Government, becomes perfectly obvious.

Simultaneously the treaty contains wording from which it follows that the participation of West German firms will be subjected to regulation by enactments concerning military-industrial production. First of all, the procedure for the granting of orders must correspond to the provisions of the 1978 American-West German agreement on the principles of mutual cooperation in the sphere of research, development, manufacture, purchase and rear securing of military equipment. The treaty goes on to point to the corresponding directives of the U.S. Defense Department. Finally, determination of the degree of confidentiality and secrecy of information is the exclusive right of the Pentagon.

The military nature of the SDI Treaty was revealed particularly clearly by Bavarian Prime Minister F.-J. Strauss, who from the very outset had actively involved himself in support of the FRG's broadest possible participation in the American military-space project.[6] Speaking on 7 April, he emphatically repudiated the statements of M. Bangemann and H.-D. Genscher that the agreements signed in Washington "have nothing in common with military security interests," calling such assertions "simply false". According to Strauss, he had familiarized himself with the documents 2 weeks previously and was "comprehensively briefed" by M. Woener. "The bulk of the agreements," he declared, concerns "security interests".[7] For his part, C. Weinberger emphasized at a NATO Nuclear Planning Group session (Wuertzburg, 20-21 March 1986) that he sees the SDI Treaty as a "military treaty," compared with which the Agreement in Principle on technological exchange is of a "lower legal quality".[8]

Although the United States promised--in nonbinding form, it is true--to improve the possibilities for West German firms' more intensive use of American "high" technology, it essentially reserved for itself on all the most important questions an unlimited right of veto. Thus the SDI Treaty points out that deals are to be transacted by the U.S. Government "in accordance with American law and other legal precepts" (article 5.1.1).

The vague, equivocal wording in which the American "statements of intent" concerning further cooperation are couched leave Washington sufficient freedom of action to itself determine the need for and terms of the FRG's participation in the research programs. In addition, the U.S. Government reserves the right to make decisions "in accordance with the security interests, laws and policy of the United States... concerning use of the results of nonsecret research projects... for nonmilitary purposes" (article 8.3.3 of the SDI Treaty).

Doubts are multiplying in this connection in the press and business circles of the FRG[9] concerning the expediency of West German firms' participation in the SDI program. "Let us not harbor illusions... The federal government has nothing that it could not obtain even without the SDI agreements," the influential weekly DIE ZEIT, for example, writes. And goes on: "No firm which is doing well needs to participate in the SDI."[10] And even before the agreements were signed the weekly WIRTSCHAFTSWOCHE, which represents the interests of big business, expressed disquiet in connection with the "impediments to the free flow of the results of the research" on the part of American legislation (primarily the Administrative Exports Act and the Arms Exports Control Act), which "will in no way be affected by the agreements."[11] A certain skepticism is expressed even by such an active supporter of the agreements as S. Mann, spokesman for the country's most influential employers' association--the German Federal Industry Union. He was forced to admit that the principles formulated in Washington "have yet to undergo the serious test of future individual contracts."[12]

As already mentioned, the SDI Treaty records that final decision-making on questions of secrecy and the exchange of technology is the right of the U.S. Defense Department (article 7.2). However, it ensues perfectly unequivocally from the Agreement in Principle and the exchange of letters that both states intend stiffening embargo measures and applying more strictly the already concerted restrictions on exports to the CEMA countries of technology which could be used for military purposes.

The U.S. demands on the FRG Government (they are formulated in R. Perle's letter in the form of questions) amount to the following: stricter compliance with the rules of CoCom (the notorious Coordinating Committee for control of exports to the socialist countries); a tightening of control over exports by way of changes to FRG legislation concerning foreign economic relations and also the penalties for violating this legislation as far as the application of "severe deterrence measures"; bilateral consultations between the FRG and the United States in the process of preparation for multilateral CoCom meetings.

As becomes clear from the return letter of L. (Shomerus), the FRG is already complying with a number of these demands. It also intends upgrading, in accordance with the United States' ideas, its export-control mechanism. It is contemplated for this purpose increasing observation of the movement of commodities subject to the embargo on the territory of the FRG and West Berlin; stiffening the terms of the conclusion of transit deals in respect of these commodities; and introducing a rule in accordance with which employees of foreign diplomatic and consular missions are obliged to seek authorization to export commodities and technology subject to the embargo. In addition, the governments of the FRG and the United States have reached agreement concerning the need to transform the CoCom into a more efficient instrument of export control and improve cooperation between its members.[13]

In displaying a readiness to consent in conjunction with the United States to an additional tightening of the technology embargo the FRG Government simultaneously for the first time in the history of its bilateral agreements granted another state--the United States--the right to a say when deciding questions concerning West German exports to the socialist countries. The FRG has thereby made itself even more dependent on American trade policy. With the conclusion of the Washington agreements, DER SPIEGEL writes, the United States acquired a "new lever" for "smothering" West German firms' trade with the East. "It wishes to prescribe for West Germans directly what they may export and what not."[14]

The true nature of the compact concerning the FRG's participation in the SDI is causing growing concern among the peace-loving public both in the FRG itself and outside. With the Washington agreements, UNSERE ZEIT, the newspaper of West Germany's communists, writes, the federal republic "is being integrated into an undertaking whose realization... will reduce to nothing all the efforts to curb the arms race on earth."[15] As the statement made in this connection by the USSR ambassador in the FRG to the FRG Foreign Ministry points out, "the FRG will not find a solution to any of the questions of its present and future on the paths of the arms race and participation in military preparations against the socialist countries."[16]

FOOTNOTES

1. One reason was the Pentagon's fears that publication could weaken the United States' positions at the impending negotiations on the conclusion of similar agreements with Italy, Israel and Japan (see FRANKFURTHER ALLGEMEINE, 29 March 1986).

2. See DER SPIEGEL, 21 April 1986, p 28.

3. Addressing the Bundestag on 18 April 1985, Chancellor H. Kohl said: "The resolve and moral right of the U.S. President in this matter are not for me in doubt. Therefore the American research program is, from our viewpoint, justified and politically necessary and corresponds to the security interests of the West as a whole" (DER TAGESSPIEGEL, 19 April 1985).

4. Contrary to the wishes of the United States, which insisted on the signature of Defense Minister M. Woerner, the FRG Government preferred that of the economics minister, attempting to create the impression that "it is not a question of a military agreement but an agreement concerning technological exchange within the framework of SDI research" (see FRANKFURTER ALLGEMEINE, 19 March 1986).

5. See FRANKFURTER ALLGEMEINE, 21 March 1986; DIE WELT, 29/30 March 1986.

6. Thus Strauss declared at the CSU congress in Munich (November 1985): "The American work cannot now be stopped prior to the end of the research phase.... Whence it follows that we should not remain aloof and not seek surrogates of the EUREKA type but by participating in the work and cooperating in the development of new S&T systems take advantage of the opportunity to join in the S&T cycle, which could lead to the new superiority of one of the superpowers..." (BAYERNKURIER, 30 November 1985).

7. See FRANKFURTER RUNDSCHAU, 8 April 1986. F. Ruhe, deputy chairman of the CDU/CSU Bundestag faction, also acknowledged in an interview that although specifically it is a question of an improvement in the possibilities of the cooperation of the West German economy, it is also true that SDI research is "primarily a military-political project" (see DIE WELT, 4 April 1986).

8. See FRANKFURTER ALLGEMEINE, 22 March 1986.

9. Upon his return from the United States M. Bangemann declared that the question of possible participation in the SDI was still being discussed by 50-60 West German firms (see FRANKFURTER ALLGEMEINE, 29 March 1986).

10. DIE ZEIT, 28 March 1986.

11. See WIRTSCHAFTSWOCHE, 21 March 1986, p 15.

12. See HANDELSBLATT, 21 April 1986.

13. See DER SPIEGEL, 21 April 1986, p 28.

14. DER SPIEGEL, 14 April 1986, pp 19-20.

15. UNSERE ZEIT, 5 April 1986.

16. PRAVDA, 5 April 1986.

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"Mirovaya ekonomika i mezhdunarodnyye otnosheniya", 1986.

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SDI AND SPACE ARMS

AVIATION AND COSMONAUTICS REVIEWS BOOK ON SPACE

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 7, Jul 86 (signed to press 3 Jun 86) p 39

[Article, published under the heading "New Books": "Space and Peace"]

[Text] Professor and Doctor of Juridical Sciences G. P. Zhukov, a specialist in the field of international space law, has written a book devoted to this extraordinarily crucial problem ("Kosmos i mir" [Space and Peace], Moscow, Nauka, 1985, 88 pages, 45 kopecks). The very chapter titles — "Space for the Benefit of Mankind," "Preventing Militarization of Space," and "International Cooperation in Space" — suggest the range of issues addressed in this book.

The author examines space as a new domain of human activity. The area of utilization of the achievements of the space program for the benefit of man is quite extensive: areas include weather forecasting, study of Earth resources, communications, TV broadcasting, the COSPAS-SARSAT satellite system, and industrialization of space.

One chapter is devoted to exposing U.S. plans to turn space into a theater of military operations and a springboard for aggression against other countries. In conditions of detente, thanks to initiative on the part of the USSR, international agreements have been concluded which block some channels to militarization of space. The signature of U.S. representatives is also to be found on these documents. U.S. military experts, however, are presently attempting to find ways to bolster the argument that their aggressive plans are compatible with the obligations specified in these treaties.

Bilateral cooperation is a widespread form of uniting the efforts of nations in the peaceful exploitation of space. The author cites joint efforts between the Soviet Union, India, and France as an illustration. The joint Interkosmos program is being successfully carried out within the framework of cooperation between the USSR and the socialist countries. This is discussed in the book's third chapter.

At Soviet inititive, the issues of peaceful exploration and utilization of space are a constant topic of discussion at UN General Assembly sessions. As the author correctly notes, however, as international relations become aggravated as a result of the general militaristic policy being followed by

the present U.S. Administration and its efforts to extend the unchecked arms race into space, the activities of nations connected with utilizing space for peaceful purposes and cooperation in this area are being endangered. A change for the better is needed in the international arena. The peoples of the entire world are waiting for and demand such a change.

This book will be of assistance in the work of Air Force unit and subunit agitators and propagandists.

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SDI AND SPACE ARMS

XINHUA SEES SDI AS STUMBLING BLOCK

OW131252 Beijing XINHUA in English 1234 GMT 13 Oct 86

["News Feature: An Unfinished Game by Xiong Changyi" -- XINHUA headline]

[Text] Beijing, October 13 (XINHUA) -- Fourteen years ago, Bobby Fisher of the United States and Boris Spassky of the Soviet Union fought out their gruelling East-West chess championship in Reykjavik, the quiet capital of Iceland.

Fourteen year later, the leaders of the two superpowers sat face-to-face in the same city during the past two days to play another game, hoping to pave the way to a full-scale summit and reach the first disarmament accord that would actually cut nuclear arsenals, rather than simply limit deployment plans.

Now, after four rounds of talks over two days, U.S. President Ronald Reagan and Soviet leader Mikhail Gorbachev have not agreed on arms control, nor was a firm date set for a full-scale summit.

Reagan, speaking to U.S. servicemen near Reykjavik, said he made the Soviet leader a historic offer on arms control which Gorbachev rejected.

Gorbachev, addressing a news conference in the Icelandic capital, said the U.S. leader had come to the meeting with empty hands and the talks had collapsed.

"This has been a failure, and a failure when we were very close to a historic agreement," the Soviet leader added.

Reports say the summit failed because of a dispute over Reagan's Strategic Defense Initiative (SDI), otherwise known as the "star wars" program, a U.S. plan to build a space-based anti-missile shield.

Gorbachev proposed "strengthening" the 1972 Anti-Ballistic Missile Treaty over a 10-year period and had accepted U.S. "laboratory testing" for the star wars program.

But Reagan insisted on carrying out tests not only in the laboratory but also in space.

For the superpowers, SDI has become a sticking point.

The United States says it merely seeks a shield from nuclear missiles, but the Soviets say the U.S. could launch a nuclear first-strike from behind such a barrier.

Another reason for the failure is that the summit meeting was hurriedly arranged and the two leaders went to the meeting with domestic political purposes in mind.

Reagan felt a successful presummit summit would allow him to be perceived as a president who put superpower relations back on track, and thus boost his efforts to help Republican campaigns for November's midterm elections in the United States.

As for Gorbachev's, he seemed to be seeking an agreement on controlling the costly arms race, thereby allowing the Soviet Union to devote more attention to domestic econmic development, and also easing overall tensions.

However, as the summit broke up last night, both Gorbachev and U.S. Secretary of State George Shultz said it was not the end of the road.

"We'll return to Geneva and I suppose they will," Shultz said, while Gorbachev indicated that "this meeting has brought us to the point where accords are possible."

It seems that the game played by the two superpowers has not finished. It remains a tough game.

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U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

BONN SEES URGENT NEED FOR ACCORD ON SHORT-RANGE MISSILES

Three-Part Treaty Envisioned

Frankfurt/Main FRANKFURTER ALLGEMEINE ZEITUNG in German 3 Oct 86 p 10

[Article by Claus Gennrich: "Bonn Calls for Interim Agreement"]

[Text] Bonn, 2 October--The Bonn government believes that the possibility may soon arise for the conclusion of agreements between East and West ranging from arms control to the environment and technology. The signatories would not only be the United States and the Soviet Union but also some nations of Western and Eastern Europe, including the FRG and the GDR. Initially, the FRG means to use the opportunity of the incipient agreement on intermediate-range missiles to see to it that the anticipated follow-up negotiations will not exclude an interim agreement on short-range missiles. The Bonn government has therefore suggested to the Americans to call for negotiations on 150 to 500-kilometer-range missiles as part of an interim accord. But this position not only requires the support of Washington but also that of Moscow. The Bonn coalition has responded to opposition criticism to the effect that it is making a Soviet-American rapprochement more difficult by pointing out that the SPD, at its Nuremberg party congress, had also stressed the need for an arms control agreement on short-range missiles.

In the Bonn government's view, neither the United States, nor the Soviet Union is being overtaxed by its request. The FRG, after all, is asking no more than that Washington and Moscow make good on their previously stated intentions. Although these short-range missiles have never been part of any of the Geneva negotiating proposals, Bonn says, they have never really been left aside either. And, both Moscow and Washington have separately declared on previous occasions that they were ready to discuss these weapons. The Bonn government recalls that Gorbachev once proposed parallel negotiations on short-range missiles and conventional disarmament. Bonn wishes to get the superpowers to continue along these lines. By pointing to the NATO dual resolution, the government aims to dispel any suspicion that it is slowing down the process. A position paper which provided the basis for the dual resolution stated that negotiations would proceed step by step, concentrating on intermediate-range weapons initially--which would now be dealt with under the interim agreement--and then moving on to the other systems. This

is the procedure to which the Bonn government now wishes to commit the United States and the alliance. The rationale behind it, the government says, is that the FRG after all is bearing the greatest burden of the threat.

The Bonn view is that there should be a three-part interim agreement. First: reduction of long-range intermediate missiles, including equal worldwide and regional upper limits for both sides. Second: collateral agreements on 500 to 1,000-kilometer-range missiles. This would call for an upper limit by a specific date yet to be agreed on--which would amount to a Soviet freeze and the opportunity for the West to increase its arsenal to that level. Third: agreement on further negotiations with the goal of including shorter-range missiles so as to achieve substantial reductions at equal levels. One other question remains open aside from this last point: the question of reducing the number of Soviet missiles in Asia as well as negotiations on 500 to 1,000-kilometer-range weapons. In this regard, the Soviet Union has given an equivocal response to the American proposals. And as far as the Bonn government's wish to see the mix between the Pershing IIs and the cruise missiles retained is concerned, Moscow has not yet accepted that position either. Under no circumstances does the FRG wish to be "singularized" with the remaining part of the arms modernization program, retaining a handful of Pershing missiles in case a mere interim solution is reached.

But there is more to it than mere disarmament. Chancellor Kohl believes the Gorbachev era may signal historic change. This is a topic which the chancellor will probably discuss with President Reagan when he visits him in Washington on 20 October. On that occasion, the President will be able to report to him on his meeting with Gorbachev in Reykjavik. Kohl believes that Gorbachev's goal is a partial decentralization of the economy along the lines of the Chinese and Hungarian model. Otherwise, the Soviet Union will not be able to extricate itself from the position of a medium-sized economic power into which it has been falling. In Kohl's view, Moscow's difficulties are being compounded by the consequences of the Chernobyl nuclear accident. The immediate costs of the disaster alone appear to amount to DM 14-17 billion. Since the economic potential of Japan is tied up in Asia and the United States is oriented toward its own domestic market, the importance of Western Europe for the Soviets is increasing.

The chancellor appears to be thinking of cooperative arrangements between Soviet Union and Italy, France, Great Britain and--above all--with the FRG. If and when some of the larger combines as well as some of the individual ministries are empowered to conclude business deals with Western firms or groups of firms, Kohl believes additional opportunities for the future will open up. In his talks with Soviet political leaders, Kohl has frequently cited the Lenin dictum that "all roads to Europe pass through Berlin"--which is his way of saying that Germany plays a key role in any cooperation with the other nations of Western Europe. The chancellor is

hoping for long-term developments along these lines in various areas which can then be used for improvements in human relations and should not be restricted to the Soviet Union itself.

FDP political leaders, such as deputy fraction chairman Solms, have pointed out that some communist nations are interested in expanding economic contacts. Solms, who is an expert and manufacturer of microelectronics, says that the Warsaw Pact states are hopelessly behind in this field, as far as he can tell. This is why these countries are so interested in concluding technology agreements with Western countries. Competition among the CEMA nations is increasing. Bulgaria, which leads the East in computer technology at this time, is developing performance incentive and profit-sharing schemes in new small enterprises--but has not turned to private ownership like Hungary. The coalition believes there is a connection between economic cooperation and political flexibility. One part of this range of possibilities is the emerging readiness to conclude arms control agreements. This needs to be moved along with Bonn's help.

Woerner Explains in Interview

Frankfurt/Main FRANKFURTER ALLGEMEINE ZEITUNG in German 3 Oct 86 p 3

[Article by "ly": "Woerner Underscores German Security Interests"]

[Text] Bonn, 2 October--In an interview with this newspaper today, Defense Minister Woerner stressed the need not to restrict arms control negotiations to the reduction of long-range intermediate missiles but also to reduce the number of nuclear missiles which could strike "only" the FRG in case of war. For the Germans in particular, this is an "indispensable" requirement, Woerner said, if the opportunity should now arise to reduce the long-range intermediate arsenals. It is the duty of the Bonn government, he added, to insist on this. It is its primary responsibility to safeguard German security interests--and these are not limited to weapons whose range extends beyond the FRG but apply above all to those weapons which are targeted on the FRG in the first instance, e.g. in particular to the 600 Scud-B missiles deployed by the Warsaw Pact east of the inner German frontier and in Czechoslovakia. To label such a position as an obstacle to the impending talks is tantamount to denying the Germans the same right to profit from arms control and disarmament agreements as any other nation. Woerner said that the Germans should not "stand aside" in the matter of lessening the pressure exerted on the public mind and the political life of the nation by nuclear weapons. "Arms control is not an end in itself," the defense minister said. "Arms control makes sense only if it serves to improve security."

With this statement, Woerner underscored the Bonn government's decision to insist both within the alliance and vis-a-vis the United States that any interim agreement on long-range intermediate missiles (i.e. between 1,000 and 5,500 kilometers) as is now envisaged by Washington and Moscow should not merely include the 500 to 1,000-kilometer-range missiles but also a declaration of intent to continue negotiations after signing the initial agreement on still another accord which reduces and places upper limits on 150 to 500-kilometer-range missiles. At this time, there are 600 such missiles deployed on the Warsaw Pact side as against none on the NATO side.

The fact that the Soviet Union has indicated to the United States that it stands ready to sign an interim agreement which would reduce the number of nuclear warheads on the long-range intermediate missiles in Europe to 100 on both sides is viewed by Woerner as a success of the arms modernization program and the steadfastness of the FRG government.

"From the very start, the FRG government has stated that a chance for serious negotiations only existed, if we left no doubt about our will to go through with the arms modernization program," Woerner said. "That is another way of saying that we are now cashing in on our resolve. That is a triumphant justification of the policy of this present German government. The SPD and the Greens said that a new ice age would begin when the government agreed to the modernization program. The exact opposite has happened. The Soviet Union now finds itself in the position--in contrast to the negotiations it conducted up to 1982--of having to offer drastic cuts in its own arsenal. That needs to be emphasized because it tells a great deal about the political judgment of those who prophesied that a new ice age was upon us."

The Bonn government, he added, supports all efforts leading to arms reduction. "We have stated that we wish to reduce armaments. 'Creating peace with fewer and fewer weapons' is not just a propaganda slogan as far as we are concerned. We really mean it," Woerner said, adding that NATO has already unilaterally reduced its nuclear weapons arsenal in Europe by more than 2,000 warheads in pursuance with the resolutions adopted by the Montebello and Luxemburg meetings in 1983 and 1985."Now we also stand ready to support a reduction in long-range intermediate weapons in Europe, down to 100 warheads on both sides. But we would also like to extend this reduction to the other ranges because it makes no difference to those immediately involved whether they are threatened by a 500-kilometer or a 5,000-kilometer-range nuclear missile," Woerner said. The Bonn government would also like to see a reduction in short-range missiles down to a range of 150 kilometers and an agreement on maximum limits for both sides. "Our government," he said, "believes that negotiations about intermediate-range weapons be continued immediately after an interim agreement has been reached on the longer-range systems. For this reason, the interim agreement should already include language calling for such a continuation of negotiations." The German interest in an

agreement on a reduction in 150-kilometer to 500-kilometer-range missiles is not only enhanced by the fact that not a single NATO weapon of this type exists to counter the present 600 Warsaw Pact weapons but also by the fact that the Soviet Union has developed chemical and conventional warheads for its short-range missiles. "It is therefore in the German interest to see to it that the Soviets are not allowed to circumvent an accord on long-range intermediate weapons by placing no limits on these other weapons,"Woerner said.

Woerner then reiterated the need to maintain the defense capability of the alliance. "We are in favor of a reduction of all nuclear weapons to a lower level. But the gauge of our security policy must continue to be the NATO strategy of flexible response. It calls for a mix of conventional weapons, tactical nuclear weapons and intercontinental strategic nuclear weapons. The flexible response strategy will remain convincing only so long as its components and their mix have a deterrent effect. That alone will result in the kind of incalculable risk for any potential aggressor which can maintain the peace. But this risk is the consequence of the capability credibly to threaten the aggressor with the escalation of the conflict. In a word," Woerner said, "the goal is to maintain and preserve the deterrent."

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U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

FRG PAPER CALLS FOR GOVERNMENT UNITY ON ARMS CONTROL

Frankfurt FRANKFURTER ALLGEMEINE ZEITUNG in German 8 Aug 86 p 10

[Article by Karl Feldmeyer: "It's Not Just a Matter of a New 'Gray Zone': Disarmament Negotiations and Short-Range Nuclear Weapons"]

[Text] President Reagan's announcement of 27 May that in the future the United States will no longer adhere to the upper limits which had been agreed on in the--never ratified but still honored--SALT II treaty on strategic arms for the two superpowers has awakened concern that a new arms race lies ahead. It no longer seems clear to the politicians, like Foreign Minister Genscher or CDU politician Ruehe, who criticized the American President on this matter that the SALT II treaty is being followed by one of the greatest challenges that the alliance has ever had to overcome: The Soviet build-up of SS-20 missiles.

An Element in Disengagement

In the SALT II treaty Washington and Moscow set upper limits for their strategic weapons, thus land-based intercontinental missiles (range over 5500 kilometers), sea-based nuclear ballistic missiles, and aircraft of intercontinental range. They deliberately refrained from agreeing on an arrangement for shorter-range nuclear weapons systems. For one thing, this would have complicated the subject of negotiations, and for another, it would have changed the goal of the treaty. The latter was concerned exclusively with the security of the two superpowers against weapons with which the one could directly strike the territory of the other. The security interests of their respective allies were left out of SALT II.

The SALT treaty provided the Soviet Union with the opportunity of making intermediate-range nuclear weapons an element in disengaging the United States from its allies. By introducing a new nuclear missile of pinpoint accuracy and a range of a good 5000 kilometers, the SS-20, they developed a potential that not only insured them of unilateral superiority over the West European NATO countries and the capacity to threaten them, but also created politically different zones within NATO: One zone of balanced armament and threat (the Soviet Union and the United States), and a second zone of strong Soviet superiority (the Soviet Union and West Europe).

The experience that SALT II led to a sharp imbalance in the threat to Europe and Asia should really be taken into account in future disarmament negotiations. Care must be taken that new areas, not covered by an agreement do not arise so-called "gray zones" below the range of those weapons for which agreements are being sought. It is ultimately immaterial whether Soviet superiority over West Europe is due to nuclear weapons with a range of 5000 kilometers or 500. Hamburg, Bonn, Munich, Brussels and Antwerp can be reached by both types.

The assumption that this will be taken into account by either the Soviet or the American side at the negotiations in Geneva on the limitation, possibly even elimination of intermediate-range nuclear missiles is, however, false--or at least has been up till now. The Americans have limited their approach to negotiating with Moscow to nuclear weapons with a range of more than 500 kilometers and less than 5500. Anything that reaches further belongs with intercontinental weapons, weapons with a range of less than 500 kilometers the Americans group with the SNF [Short-Range Nuclear Forces]: For them these are battlefield weapons in an extended sense. In doing so, the American definition--this can also be found in American publications like the magazine SOVIET MILITARY POWER--deviates from NATP's classification scheme in this important point. NATO distinguishes between several categories of nuclear weapons. First: SNF, which are battlefield weapons that can reach up to 150 kilometers. Second: SRINF [Short-Range Intermediate Nuclear Forces], which are intermediate-range weapons with a range between 150 and 1000 kilometers. Third: LRINF [Long-Range Intermediate Nuclear Weapons], which are intermediate-range weapons with a greater range, namely between 1000 and 5500 kilometers.

This scheme was not taken into account on the American side in the intermediate-range negotiations conducted from 1981 until November 1983, when they were broken off by the Soviet Union--nor in Washington's new proposals of 1 November of last year and 24 February of this year. Here, Washington made a proposal for LRINF missiles which would lead, in three stages of disarmament, to a mutual zero-solution by the end of 1989. The concept of SRINF is not more closely defined in this proposal. Within the alliance, however, it is known that the Americans view only systems with a range of more than 500 kilometers as part of the SRINF. On the Soviet side these are currently missiles of the SS-12/22 type (range 920 kilometers) and the SS-23, the successor to the SCUD-B missile, with a range of 520 kilometers. So far there are only a small number of SS-23s, which have just been introduced into the Soviet armed forces; on the other hand, there are already more than 100 SS-22 missiles in Europe alone. NATO has only the Federal Army's 72 Pershing IA's, with a range of 750 kilometers, in the way of missiles of comparable range in Europe. The 108 American Pershing IA's have been scrapped; in their place, the Pershing II has appeared which, with a range of 1800 kilometers, counts as part of the LRINF, the intermediate-range missiles of longer range.

It is clear that a failure to consider the nuclear missiles with a range of less than 500 kilometers would be just as disturbing for NATO, and especially for the FRG, as it would be attractive, on the other hand, for

the Soviet Union to agree to it: Then they could repeat the endurance test that NATP already had to undergo while rearming in response to the basing of the SS-20's. In the ranges between 150 and 500 kilometers there currently exists a threat ratio between East and West of 600 to zero: There is not equivalent to face the 460 SCUD-B nuclear missiles, with which the Soviet units between the border zone and the Urals are equipped and whose range comes to 300 kilometers, along with the 140 SCUD-B missiles, with which Moscow has equipped the armed forces of its allies. This overwhelming Soviet superiority is supplemented by the battlefield nuclear weapons whose range, according to the NATO definition, can reach to 150 kilometers. Here in Europe, the 85 Lance missiles belonging to NATO (range 120 kilometers) are opposing 650 Soviet Frog missiles with a range of 90 kilometers and 110 SS-21 missiles with a range of 120. In addition, there are a considerable number of cannons on both sides that can fire both conventional and nuclear ammunition.

No Overall Plan

It is of vital importanct to the security of the FRG that disarmament agreements are not limited only to the long-range intermediate missiles and the short-range nuclear weapons are then not taken into account. Thus far, efforts to correct the American negotiating approach so that it will suit the alliance's interests and also include the potential with a range of less than 500 kilometers have been essentially confined to the Defense Ministry. There, they have considered how nuclear missiles with ranges between 150 and 500 kilometers could be incorporated into our own political concept of arms control. This is a matter of the multiple threat from Soviet weapons of differing ranges, and also of which short-range nuclear weapons systems are indispensable to NATO itself, if it were to come to drastic reductions in the LRINF.

In order to assert themselves with Washington on this issue, the Federal Chancellery and the Foreign Office would have to pull together with the Defense Ministry. This has not previously been the case because, on the one hand, the demand to take short-range weapons under consideration in an agreement concerning intermediate-range weapons lessens the chance of arriving as quickly as possible at a politically presentable "success". On the other hand, the demand to include these weapons would have to be tied to an overall plan for nuclear arms control. The FRG government would thus have to know whether the zero-solution that it is demanding for long-range intermediate missiles is also a goal that it views as desirable for the short-range ones as well. If it were to do so, a large gap would open between the battlefield weapons and the strategic intercontinental weapons. The plausibility of the threat of escalation would be considerably reduced. If the Federal government were to go a step further and also include the battlefield weapons in the zero-solution proposal, it would be speaking up for the denuclearization of Europe--a position that would lead to the removal of the Americans' umbrella of nuclear protection.

Thus, the Defense Ministry's initiative raise more questions than can be defined by the keyword of gray zone. It shows the lack of a plan behind the demand for a zero-solution, which was forced on the Americans in 1981 against all practicality by the FRG government of the time for political reasons. The current government has taken over this demand because it feared the reproach of being a "government for nuclear weapons". A solution might come via an "interim solution", whereby the number of long-range intermediate weapons would only be reduced. This would guarantee the continuity of deterrence and at the same time offer the possibility of drastically reducing the number of short-range nuclear weapons-including even the battlefield weapons. Both would be in the interest of NATO and particularly the FRG.

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U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

ITALY'S CRAXI, ANDREOTTI COMMENT ON REYKJAVIK

LD141804 Rome International Service in Italian 1555 GMT 14 Oct 86

[Excerpt] The government hopes for the resumption of the U.S.-USSR talks following the Reykjavik summit. This was said at today's meeting of the Inner Council which was devoted to an in-depth discussion on the result of the meeting between Reagan and Gorbachev held last Saturday and Sunday. The disappointment at the lack of a final agreement between the two superpowers was expressed obviously at the meeting which began with a detailed report by Andreotti on yesterday's NATO meeting in Brussels. According to Craxi, this disappointment must not be overestimated since a great effort for a more secure peace has been made at Reykjavik and because they have never come so near to a global agreement on disarmament in the history of the U.S.-USSR summits. In the opinion of the prime minister, now it is necessary to work with patience and tenacity to eliminate the obstacles and to strengthen the points of understanding. Italy is playing its role from the start by continuing to support every effort to widen the margins of understanding.

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CSO: 5200/2418

U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

USSR'S BESSMERTNYKH BRIEFS CRAXI ON REYKJAVIK

AU161056 Rome ANSA in English 1034 GMT 16 Oct 86

[Text] (ANSA) Rome, October 16 — Moscow and Washington should not slam the door on the negotiations process just because they failed last weekend to reach arms control agreements at the Reykjavik summit talks, according to Soviet Deputy Foreign Minister Aleksandr Bessmertnykh in his briefing to Rome government authorities.

Bessmertnykh displayed the results of the weekend talks in Reykjavik between U.S. President Ronald Reagan and Soviet leader Mikhail Gorbachev to Italian Prime Minister Bettino Craxi and Foreign Minister Giulio Andreotti on Wednesday.

The Soviet envoy did not rule out the possibility of a full-dress summit between Gorbachev and Reagan in remarks to the press after the meetings in Rome, but he confirmed that "it is not possible to name a date" at this time.

A statement from Craxi's office said Bessmertnykh briefed the Rome government leader about the proposals Gorbachev tabled in Reykjavik, mainly having to do with strategic systems, intermediate-range nuclear missiles and arms in space.

"The Soviet emissary took pains to emphasize the evolution that has come about in Moscow's stand and new openings upheld for the sake of leading negotiations towards a substantial and progressive armaments reduction," the communique reported.

One sign of Moscow's "evolution", according to the Rome government's account of Bessmertnykh's briefing, was its acceptance of the notion of letting separate negotiations move at their own speed.

But the envoy also reminded Craxi that the possibility of achieving different levels of progress in "interdependent" disarmament negotiation carries an "unsurmountable limit".

That limit was described as the U.S. refusal to accept Gorbachev's proposal to restrict the Strategic Defense Initiative (SDI) to laboratory research.

"Disappointment for the failure to reach an agreement in Reykjavik," Bessmertnykh was quoted as saying, however, "should not lead us to slam the door on dialogue".

Craxi agreed, saying that Reagan's and Gorbachev's failure to achieve a global framework agreement at the weekend summit talks "should not reduce their dedication to the negotiations process".

"On the contrary," the Rome government leader insisted, "the very fact that considerable progress was made in the Icelandic capital in the areas of disarmament and human rights means that there is still a major potential for agreement...."

The Soviet diplomat repeated assurance that "negotiations will continue" in his subsequent meeting with Andreotti, whom he told that the platform agreed upon in Reykjavik "remains valid" and will be transferred to the bargaining table in Geneva.

Andreotti gave assurances that Italy will continue to make every possible effort to promote a solution to the remaining "obstacle" in all possible forums. "Dialogue must be pursued between Europe and the United States as well as between Europe and Eastern bloc nations," he argued, "in order to bring clarity and reduce the distance" in the negotiations process.

Meeting with reporters again after his talks with Andreotti, the Soviet envoy voiced the conviction that the Reykjavik summit represented "an important step on the path leading to an agreement to reduce nuclear armaments".

"The points on which the two agreed in Iceland," said Bessmertnykh, "represent historic achievements" for the two nations. "For the first time, (the two sides) went beyond the stage of well-meaning statements to move towards concrete action," he added.

"And we agreed to destroy all offensive strategic arms in the [words indistinct] years' time, an accomplishment which as recently as one month ago appeared unthinkable".

"We particularly reached a preliminary agreement to solve the problems of medium-range nuclear missiles in Europe," he concluded.

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CSO: 5200/2418

U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

ITALIAN OFFICIALS, PRESS OFFER FURTHER REACTION TO SUMMIT

Andreotti on Summit, Briefings

AU170926 Rome ANSA in English 0823 GMT 17 Oct 86

[Text] (ANSA) Rome, October 16 -- Italian Foreign Minister Guilio Andreotti confirmed the government's impression that the Reykjavik talks were "productive" in a statement to the lower house Foreign Relations Commission on Thursday.

He also reiterated that the recent agreement to let Italian companies take part in research for the Strategic Defense Initiative (SDI) "in no way" reflected Italian endorsement of the project's "political and strategic implications".

Andreotti said that the contacts the government had with Soviet and American envoys after the weekend summit talks confirmed the impression that the meeting moved at an intense pace and tensions emerged at some points. " ..But the meeting was also productive", he added.

Both U.S. Secretary of State George Shultz and Soviet Deputy Foreign Minister Aleksandr Bessmertnykh gave assurances that the agreements reached in the Icelandic capital will be put on the negotiating table in Geneva for further debate, Andreotti reported.

According to the Rome government minister, the encounter initially envisioned as a preparatory meeting for a subsequent summit, grew to unmanageable dimensions in the short space of two days of talks.

The dimension of the event was also bloated, he recalled, by increasing expectations on the part of world public opinion.

Disappointment over the failure of the two leaders to set a date for a full-dress summit and the absence of any specific agreements is okay, Andreotti reasoned, "but attention should also be given to the notable progress made on some facts of the negotiations"

He cited progress in reaching an agreement in principle to drastically reduce strategic systems, on efforts to reduce medium- range nuclear missiles in Europe and in removing prejudicial impediments to the ratification of nuclear testing treaties.

"But other factors emerged that made it impossible to achieve immediate results" at the summit, said Andreotti citing the stalemate on the ABM issue stemming from failure to agree on research limits.

Andreotti said Soviet leader Mikhail Gorbachev's envoy indicated in his account of the summit to Rome government authorities Wednesday that Moscow was not interested in sharing space defense research findings with the Americans.

The Soviet approach to security, he added, calls for the destruction of existing arsenals. The Soviets refuse, however, to ditch offensive systems as long as the Americans keep the option of building a defense system in space.

Andreotti warned against "underestimating the potential for future developments" not least because U.S. President Ronald Reagan and Gorbachev showed themselves "capable of advancing more incisive proposals" than the ones that "characterized the negotiations process up to now". Europe, he said, is particularly sensitive to the negotiations on intermediate-range nuclear missiles.

While acknowledging Moscow's apparent reluctance to take single issues of the negotiations separately, Andreotti cited "Reagan's and Gorbachev's declared willingness to pick up the Geneva negotiations where the summit left off" as a "hopeful" sign.

But the Italian Government official stressed that reciprocally acceptable inspection systems still had to be devised "in order to remove one of the causes of mutual distrust".

In this framework, Andreotti argued that Europe can play a bigger role than in the past, when European action was limited to promoting a resumption of dialogue. He cited the recent Stockholm conference as showing that Europe could also achieve "considerable results".

The forthcoming Vienna round of European Cooperation and Security Conference talks will provide an occasion for "supportive action", he added.

Government Weighs Results

PM171040 Rome AVANTI! in Italian 15 Oct 86 pp 1, 13

[Unattributed report: "Italy To Back Every Effort of Rapprochement"]

[Text] Italy will continue to support every effort to extend the areas of understanding and to facilitate a rapprochement. This emerged from yesterday's cabinet council meeting devoted to an examination of the results of the Reykjavik summit. "We have worked," Prime Minister Craxi said after the meeting, "to keep hopes of a dialogue alive when icy winds blew between East and West. We are not now abandoning this commitment and this hope now that many objectives have proved so close to being attained."

The government's initiative will have an opportunity to be implemented right away. Following the cabinet council meeting it was announced that Craxi is to receive Soviet Deputy Foreign Minister Aleksandr Bessmertnykh this afternoon and the day after tomorrow, Friday, U.S. Defense Secretary Caspar Weinberger, who will also be seeing [President] Cossiga and [Defense Minister] Spadolini.

As the prime minister said, "international peace and stability are too high a stake to permit hasty assessments and conclusions about the outcome of the Reykjavik summit. In fact I believe that a major effort was made to organize a more stable, more secure, and less threatened kind of peace. The summit opened with great hopes and came very close to the chance of a historic accord — even closer than expected. We must not now risk overestimating the disappointment and distress at the failure to reach a final agreement.

"It was no secret to anyone that the negotiations were difficult and complex," Craxi continued, "just as it was known that rigid preconceptions remained on certain points, and on one point in particular. President Reagan and General Secretary Gorbachev courageously agreed to a preliminary summit decided on at short notice.

"It emerges from Secretary of State Shultz' report to the [NATO] council that never in the history of American-Soviet meetings had such an advanced point been reached along the road to a comprehensive accord on disarmament and understandings on burning issues involving the safeguarding of human rights.

"Then there was a reassertion of the will to continue the negotiations, in view of the emergence of major innovative points, which can be worked on in the future. Real international security, at a much lower level of armaments and under conditions of balance and verifiability, is now a closer objective," the prime minister continued. "It is necessary now to work patiently and resolutely to eliminate the preconceptions and to strengthen the points of understanding already reached in the various sectors. If the dialogue begun a year ago in Geneva were eventually to fail, each side could perhaps blame the other, but the real result would in fact be simply a defeat for everyone. Indeed, there is one thing that is clearer than anything else. There is no alternative to the commitment to peace."

The cabinet council's proceedings opened with a report from Foreign Minister Giulio Andreotti, who attended the NATO meeting in Brussels with U.S. Secretary of State George Shultz. "We must neither overestimate nor underestimate ourselves," Andreotti said afterward. "A contribution can always be made by everyone and, above all, a country's intelligence is proportional neither to its military strength nor to other kinds of strength. And the fact that Italy has consistently won Nobel prizes in recent years is very important in this regard." According to Andreotti there is no doubt about the next summit in Washington. "It will definitely take place," he said, "though it is difficult now to say when. It could be [illegible]."

Next Andreotti referred to the Vienna conference on European security. "Shultz and Shevardnadze will meet" there and he himself will have an opportunity for talks with his counterparts. The Vienna meeting, Andreotti added, is important because the positive results of the Stockholm meeting are being repeated in the Austrian capital. "In this connection I must point out that when a major result on disarmament was achieved in Stockholm it was not talked about much, whereas there is now much more talk about this inconclusive Reykjavik summit." "One must never be in too much of a hurry over such matters," Andreotti added, reasserting his belief that perhaps the Iceland summit "was organized too hurriedly."

With regard to the space shield Andreotti said "There has been no change with respect to Reagan's statement that no research will be concluded without providing an opportunity and time for reaching an agreement with the USSR. So I do not see why this should constitute a factor preventing an agreement."

For his part, Defense Minister Giovanni Spadolini said that "as Italians and as a government, we broached the issues raised by this breakdown and reasserted our policy of close European solidarity and close contacts with the United States on picking the thread of dialogue up again, which we do not believe has been broken." With regard to SDI, Spadolini pointed out that Italy's adherence, made official in the second half of September, "is connected with scientific research prospects and does not entail a strategic assessment of the future, which depends on investigations and laboratory research that will take another 10 years. I therefore believe that it is possible and necessary to work on the area in which the final impetus was lacking in order to bring viewpoints closer together, and I believe that this is Europe's task."

There will be a senate debate on Wednesday 22 October on the outcome of the Reykjavik summit. This was decided unanimously at yesterday's meeting of group leaders, once the government's approval was made known. The desirability of a parliamentary debate was stressed by PSI foreign affairs chief Valdo Spini as an introduction to the Foreign Ministry's budget report. "Following the initial statements about a failure," Spini said with regard to the Reykjavik summit, "there is a spreading impression of dialogues that are still open, of a door open to further developments, of good work done that must not be wasted. This is what the world public wants. "What we ask," Spini added, "is that this not be a superficial stance designed to keep the public happy but that there be a genuine will to resume the dialogue. Our country must make its own contribution and Europe must make its presence felt. There is one thing that we are clear about — the absurdity of continuing to accumulate increasingly sophisticated nuclear means of mass destruction. Talks and negotiations must continue so that the two sides can reach mutual guarantees on the point, SDI, that prevented the attainment of an agreement."

Various Papers Comment

AU161025 Rome ANSA in English 0843 GMT 16 Oct 86

[Text](ANSA) Rome, October 15 — Post-summit coverage and comment dominating the front pages of the major Italian dailies Wednesday displayed a more positive view of the weekend talks held in Iceland between U.S. President Ronald Reagan and Soviet leader Mikhail Gorbachev as compared to the widespread opinion held earlier that the meetings were a "failure"

Il Giornale of Milan said that, "Reagan listened to Gorbachev's speech and immediately went over to the Department of State to a group of experts on arms control. His chilly handshake with Gorbachev could mean, therefore, quick progress in the reduction of nuclear arms"

For *Corriere Della Sera* of Milan, "after their cool departure from Reykjavik, the two powers continue to address each other from afar with televised statements and responses in confirmation that most of the grand strategy game will be played on the propaganda level"

La Repubblica of Rome said that "the confrontation between the two powers is continuing and the common denominator is the will to salvage what can be salvaged, to give the understanding that a dialogue is still possible"

Il Messaggero of Rome noted that "the Italian Government does not consider the summit a failure. 'New work must be performed to eliminate prejudices. The summit in the United States will be held', Foreign Minister Giulio Andreotti has said"

Il Tempo of Rome told readers that the U.S. secretary of state, George Shultz, "said that he will probably meet the Soviet foreign minister in Vienna next month. The secretary of state added that both Reagan and Gorbachev had said that their arms control proposals will continue under discussion and that it cannot be said that an agreement might not be found in the near future"

Paese Sera of Rome said that "the key word is 'minimize'. The calm offensive of the White House, attempting to convince the American electorate of the correctness of the policy followed in Reykjavik, go. off in great style"

Il Popolo, the Christian Democratic Party organ, said that "Italy, in the framework of Europe, is reiterating the commitment to resuming the lines of dialogue between the superpowers so that they do not break but are strengthened in the direction of peace and stability"

The daily of the premier's Socialist Party, *L'Avanti* quoted Bettino Craxi as saying that "international peace and stability are stakes which are too high to allow hurried judgement and precipitous conclusions on the outcome of the summit"

La Voce Repubblicana, the organ of the small Republican Party said that the tone of comments in Europe has been "cautiously optimistic" and added "Beyond the failure to reach agreement, the fact that the U.S. and the Soviets experienced a real area of understanding for the first time must be emphasized"

L'UNITA on Outcome

PM161514 Milan L'UNITA in Italian 14 Oct 86 p 1

[Aniello Coppola commentary: "Reasons for a Rupture"]

[Text] The Reykjavik summit has ended by betraying the hopes nurtured on its eve and those raised by the course of its first three sessions. Indeed the duration of the meetings gave the impression that the dialogue had broached the essential issues in dispute, first and foremost the lowering of the threshold of the nuclear threat stemming from the size of the missile arsenals and from the threat of transferring the arms race into space. There were grounds for the spread of hopes of a positive outcome. During the third session, which was also supposed to have been the last, the Soviets put forward substantial proposals and made some surprising concessions, accepting American demands that they had evaded or rejected during the months since the first Reagan-Gorbachev summit.

The USSR's delegation was prepared to get rid of the crucial portion of its nuclear strength, including the land-based ICBM's which are more accurate that those deployed on submarines and which give it a clear advantage over equivalent American missiles. The trial of strength over these weapons lasted almost a year in Geneva without any result. So this interim summit — which according to the Americans' intentions should at most have confined itself to laying the groundwork for the Washington summit and providing general guidelines for the two delegations negotiating nuclear disarmament in Geneva — shaped up as though it could prove conclusive, thanks to the substantial novelties suggested by Gorbachev.

In the end it was American Secretary of State Shultz himself who confirmed that they "reached extremely important potential agreements to reduce strategic weapons (ICBM's) by half, in the first place, dealing effectively with the problem of medium-range missiles (Euromissiles) and dealing effectively with regional issues, human rights, and a number of bilateral problems. [no closing quote marks, as published] And a great deal of ground was covered on arms issues involving the ABM Treaty (that is, the treaty banning weapons designed to disarm the enemy, which since as long ago as 1972 has endorsed the founding of peace on the balance of forces). Since then each of the two nuclear giants has been sure that if tempted to inflict a lethal blow on the other, it would suffer a devastating response. So they are both forced to adopt a cautious stance out of objective necessity, whatever their respective intentions and suspicions. Like it or not, this has been the basis of peace for the past 40 years of the nuclear era. It is a balance of terror, but it is better than nuclear war.

It was in this situation that Edward Teller, the "father" of the hydrogen bomb, thought of the idea of "star wars," which Reagan renamed SDI, as a weapon of absolute defense that would render all nuclear weapons obsolete and useless, thus bringing mankind out of the stone age of nuclear terror into the golden age of secure peace. At least half America's scientists challenge the effectiveness of a shield that could in any case be penetrated by 10-20 percent of the missiles launched by the enemy — a small percentage but enough to destroy not only both superpowers but a large proportion of the entire planet as well. In any case if SDI really were capable of guaranteeing total protection, the result would be the utmost possible imbalance because it would reduce whoever did not possess it to impotence and thus surrender.

The cause of the Reykjavik summit's failure lies in the Americans' refusal at the fourth and last session to accept as an offset for the Soviet concession the shelving of SDI for at least 10 years or, rather, its confinement to laboratory research with a ban to be embodied in a renewed ABM treaty extended by a decade.

This was known to be the thorniest issue in dispute between the United States and the USSR. However, in Reykjavik the Americans not only refused to put on the negotiating table a counterproposal that would stand up to those presented by the Soviets but did something even worse. Shultz went as far as to say that if the Soviets seemed so well disposed to reach an agreement on such a broad range of issues it was due to the fear inspired in them by the space shield. Therefore, America could not relinquish it.

So in Reykjavik we saw the reappearance of the old, evil, and irresponsible idea of Reagan's that you can only negotiate with the USSR from a position of strength. The crisis of the detente process lies in this misconception. However great the differences between the two giants, detente can result only from negotiations conducted on the basis of parity — not for reasons of principle but because only the two superpowers have the power to annihilate one another and to destroy the entire planet.

Why did the representatives of a people as pragmatic as the Americans forget in Reykjavik this essential precondition for any dialogue? When that old conservative, Eisenhower, left the White House he denounced the "military-industrial complex" as a threat to America. Under Reagan this by no means hidden force has started to influence presidential decisions again

LA REPUBBLICA on Beyond Reykjavik

PM161044 Rome LA REPUBBLICA in Italian 14 Oct 86 pp 1-2

[Sandro Viola commentary: "America's 'Nyet'"]

[Text] It is in the words of the meeting's protagonists that we must calmly seek to assess the scale and seriousness of the damage done at Reykjavik, the importance of the missed opportunity. That is, in the remark by Gorbachev's adviser Georgiy Arbatov, that "we were three steps away from a historic agreement" or in George Shultz' comment that "we were within reach of an extraordinary achievement." What can we add to remarks like these, or to the regret that they express? The Iceland summit was certainly not a dialogue of the deaf. On the contrary, never before Reykjavik had a meeting of the two superpowers' leaders highlighted the existence of so many points of agreement, the specific possibility of a series of accords of major symbolic, political, and strategic importance. Then came the "failure" instead.

So the main question the day after is this: Does the "failure" of the summit create a collapse of U.S.-USSR relations, returning them violently to the tensions of 1980-84? Have all the pieces of paper on which the two leaders and their experts formulated so many plans for compromise, so many draft agreements, been wafted away on the Atlantic winds? Does the absence of any real result at Reykjavik mean that the past year's negotiations, the mutual concessions, and the two leaders' relations have all now come to nothing?

It seems not. There is profound bewilderment and disappointment, but the very existence of those pieces of paper, now stored in somebody's desks in Moscow and Washington, makes the net result of the weekend in Iceland less galling and disastrous.

In fact the 2 days of the summit and the "notes" that emerged from it show the extent — entirely unimaginable even a few months ago — to which the two nuclear superpowers are really and specifically in a position to make the world less critically dangerous than it is now. At the table in the "house on the headland" agreement was reached on virtually everything — the elimination of Euromissiles, a 50-percent reduction of strategic missiles, on-site inspection, the gradual elimination of nuclear tests. What kind of absurd rigidity on either or both sides could cause this huge progress in overall negotiations to come to nothing?

With their customary frankness, it is the Americans who reveal the extent of Mikhail Gorbachev's amenability. The head of the National Security Council, Admiral Poindexter, speaks in terms of "positive proposals far greater than we expected." Democratic Deputy Edward Markey says that "the Soviet offers in Reykjavik were the best since Russia sold us Alaska." George Shultz says he has never experienced such a "creative" time as during the long hours of negotiations on Saturday and Sunday. Edward Kennedy laments "the great historic opportunity sacrificed by Reagan on the altar of SDI."

These American impressions, as well as the "Reykjavik notes" and the "optimism" which Gorbachev professes to feel, suggest that the threads broken in Iceland can still be mended. This is what Shultz told the European allies at yesterday's Brussels meeting — namely, that it would be "a tragic mistake" not to continue the negotiations and that the present absence of an accord in no way detracts from the validity of the ideas and proposals put forthd by the interlocutors in the "house on the headland." But if the resumption of the dialogue is indeed possible, which of the two sides — the U.S. President or the CPSU general secretary — will have to make the first concession?

Reagan and his supporters are basically correct when they argue that the new Kremlin's flexibility, Mikhail Gorbachev's amenable stance, stem largely from the fears that SDI, the antimissile space shield, inspires in the Moscow leadership. The "spectacular offers" spoken of by Poindexter would probably not have been forthcoming if the Soviet leadership were not fully aware of the USSR's technological lag with respect to America and of the vast economic resources that a "space shield" race would require. The "new style" is one thing — the "diversity" of the Gorbachev leadership now seems to be an unquestionable fact — but the amenability was so sudden and substantial as to cause one to conclude that it would not have occurred if Gorbachev had not had to halt SDI.

So the general secretary "must" secure a truce. To relinquish over half of the Soviet offensive strength — as he was prepared to do 2 days ago — is difficult for him, but basically possible. What is entirely impossible for him is to attempt the internal "reform" (which he and his supporters have now gone as far as to term a "revolution") while at the same time keeping abreast of American military technology. Therefore he allows the continuation of "laboratory" research on SDI but demands that there be no testing of the new defense systems in space for the next 10 years.

One of the points that emerges most clearly from the days in Reykjavik is that the Soviets cannot, will not, budge on this. What is to be done about it? Since America's politicians, public, and scientists are divided on the feasibility and desirability of SDI; since America's European allies would to varying extents feel relieved by the idea of "space shield" research not coming out of the laboratories; and since the "Reykjavik notes" are so impressive (both sides' nuclear capability reduced to early sixties levels, for instance), both instinct and reason suggest that the next concession should come from the American Government, from Ronald Reagan in person.

But on the other hand the history of nations teaches us that no government has ever made gifts to its adversary. The military technological advantage is the result of that particular political-economic system, of the endeavors, intelligence, and security needs of the United States today. Why should Ronald Reagan — one of the most unusual figures to have emerged during the past century of world politics, with one eye fixed on his image as an actor, the other fixed on history — relinquish the elimination of the "balance of terror" and the creation of a "secure" defense of his country, if at all possible?

The day after Reykjavik it is difficult, very difficult to ask Washington to make the ultimate concession. But in the months ahead this demand could become increasingly strong and well founded. The impression now is that Moscow is planning a huge propaganda campaign not very different in spirit from that launched when NATO's Euromissiles were deployed — America responsible for Europe's insecurity and vulnerability and the stubbornness of the Washington administration. Soviet deputy ministers and ambassadors are already going about Europe's capitals describing Reagan's rigidity, while TASS talks about "the U.S. Government's imperial ambitions."

We have heard all this before, more than once. Indeed, it is the worst way that the Soviet leadership could be handling "the day after Reykjavik." The Kremlin could still salvage its image and make its arguments better understood. Actually it should not find it very difficult to do so.

First, let it stop manipulating Reagan's "refusal": Let it instead accept Reagan's arguments, thus demonstrating its intention to continue the dialogue and negotiations. Second, let it declare its willingness to conclude "at least one" of the accords that seemed possible on the Icelandic coast — for instance an accord on Euromissiles, separating it from the idea of a comprehensive agreement. Perhaps its real intention to reach an understanding will become clearer to all. Then perhaps it will also be clearer throughout the West that Mikhail Gorbachev deserves the truce that he is requesting.

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CSO: 5200/2423

U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

FRENCH DAILIES VIEW RESULTS OF REYKJAVIK SUMMIT

LE MONDE: Reagan's 'Forced Optimism'

PM151104 Paris LE MONDE in French 15 Oct 86 p 1

[Editorial: "Mr Reagan's Forced Optimism"]

[Text] The best way of disguising a failure is to present it as a partial success. Once the initial disappointment was over this is the attitude which Mr Reagan decided to adopt when he returned to Washington after the wasted opportunity of Reykjavik. However, it takes all the U.S. President's optimism to say, as he did in a television speech on Monday, 13 October, that Moscow and Washington were "closer than they have ever been" to a disarmament agreement.

As *The Washington Post* notes, the main mistake made by Mr Reagan in this affair, and one which he tried to justify, is undoubtedly that he allowed Mr Gorbachev to draw him into a "high-stake poker game." And yet, the Americans originally tried to stress the preparatory and informal nature of the Reykjavik meeting — a mere step toward a proper summit between the two superpowers. Mr Reagan is therefore being criticized by his democrat opponents for allowing himself, if not to be "trapped" by someone more clever than himself, at least to have blundered as a result of excessive pride — a serious fault in the eyes of a moralistic American public.

With 3 weeks to go before congressional elections which promise to be closely fought, this mishap comes at a very bad time. No one — and certainly not the American voters — was forcing Mr Reagan to make a hurried trip to Iceland. If there is any sphere in the United States in which there is a consensus behind the President, borne out by numerous opinion polls, it is the foreign policy sphere.

Defense and security questions, which had hitherto been totally absent from the election campaign, are now suddenly at the heart of the debate. This is an unexpected situation which will force the head of the administration to defend himself against the criticisms of his opponents, who were previously rather disoriented. The Reykjavik summit, which was presented by the Republicans when it was announced as a "surprise gift" before the 4 November elections, could ultimately have a bitter taste for Mr Reagan and his friends.

However it is far from certain that the worst will happen to the White House chief. Although the vast majority of Americans approved of the visit to Iceland, they apparently did not hope for any results. They are still just as skeptical as ever about the Soviets' sincerity and Mr Reagan's entourage can be relied upon to hammer this message home in the next few days. The Democrats are still divided on the strategy they should adopt toward the Soviet Union and it is by no means certain that they will all be capable of exploiting the opportunity they now have.

In the final analysis, it is Mr Reagan's reputation for skillful maneuvering which is likely to suffer most from this blunder. The White House staff had already made an astonishing error of judgment on Congress' feelings about sanctions against South Africa. After Reykjavik, the perspicacity of the President's advisers has again been found wanting. The ruling team, which was already on the carpet in connection with serious incidents — the affair of officially orchestrated disinformation on Libya, the CIA's involvement in Nicaragua — could have done without such a disappointment.

LE FIGARO Sees 'Beneficial Deadlock'

PM151006 Paris LE FIGARO in French 13 Oct 86 p 1

[Charles Lambroschini editorial: "Beneficial Deadlock"]

[Text] The failure of the Reykjavik summit is ultimately beneficial. Mikhail Gorbachev's insistence that Ronald Reagan should abandon his space defense initiative removed the ambiguities which the Soviet leader had so skillfully used to win over U.S. and European public opinion. The image of himself as a modern and reasonable statesman which he tried to present was merely a reflection of the West's illusions.

The fact that journalist Nick Daniloff was taken hostage was an initial sign that the suave Gorbachev could be as brutal as his predecessors. The failure of the summit confirms that the general secretary's changes of direction are merely tactical. The strategy has not changed. Like Brezhnev, Andropov, and Chernenko, Gorbachev has two objectives: to sabotage the Strategic Defense Initiative and to drive a wedge between the United States and Europe.

The technological challenge which "star wars" represents is likely to invalidate the recognition of "parity" which Brezhnev won from Nixon in the first SALT agreement in 1972. If Reagan and his successors in the White House implement the SDI, the USSR will have to choose the lesser of two evils. Either it will have to postpone the promise of economic prosperity "indefinitely." Or — and this is the least plausible hypothesis — it will have to accept the decline of a military power which is the only justification the USSR has for its status as the second superpower.

Meanwhile the Gorbachev veto is a way of calling on the Europeans as witnesses. By making an agreement on the SDI the precondition for agreement on other issues (strategic missiles and medium-range weapons), the Kremlin chief is trying to cast Reagan as the bad guy — the warmonger. This attitude is consistent with maneuvers on the Euromissiles — a subject on which a compromise seemed possible until the last minute.

The Pershing and Cruise missiles which the United States has deployed on the Old Continent to counter the Soviet SS-20 missiles are proof of the "link" between the United States and its allies. If the Soviets tried to invade the western half of Europe, they know they would be exposed to nuclear reprisals capable of totally destroying a large part of the USSR's useful territory. This deployment, decided in December 1983, was necessary to restore the value of the U.S. deterrent which alone can compensate for the Red Army's vast superiority in conventional means.

All the "solutions" envisaged before Reykjavik were therefore bound to favor Soviet interests. In particular the hypothesis of reducing the number of missiles in each camp to just 100 would have made the protection provided by the American umbrella completely illusory. The deadlock produced by the Reykjavik summit may also be beneficial in this sphere. At least it provides an opportunity to stop and think.

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CSO: 5200/2419

U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

SPANISH EDITORIALS COMMENT ON REYKJAVIK SUMMIT

PM171019 [Editorial Report] Newspapers of 13 October carry editorials which comment on the Reykjavik summit.

[redacted]

"For its part, the Repu[illegible] the weakness of the new Soviet leadership and, [illegible] the inertia of the nuclear 'can't live, can't die' [illegible] death, would make this [illegible] for reaching an agreement [illegible] come of the summit demonstrated that Reagan, the President 'the U.S. comeback,' was especially sensitive during [illegible] to the U.S. sectors [illegible] backsliding. It has been [illegible] talks concerned about [illegible] detente, but what seems indisputable following the Reykjavik setback, is that Reagan preferred, in clinging to the SDI, to squander his political capital of firmness toward Moscow. To put it another way, Reagan quailed somewhat before the specter of the 'Carter syndrome.'"

Noting that "the apparent triumph of pragmatic stances on both sides was necessary in order to reach Reykjavik," it concludes: "Now, following the failure in Reykjavik, it is to be hoped that these pragmatic stances will remain unchanged, but the fact is that the final coldness of the talks and the reactions recorded on each side portend a new period of hibernation of dialogue between the two superpowers."

Madrid *El Pais* in Spanish on 13 October states on page 11 that the SDI was "the specific cause" of the summit's failure, and continues:

"The Reykjavik summit was envisaged [illegible] preparation [illegible] the Washington summit agreed at the Geneva meeting last year. The failure in Reykjavik seems to mean that Gorbachev's visit to the U.S. capital is being erased from the agenda. There is no doubt that this is a very grave backward step in the whole process of detente between the two superpowers. For the very reason that Reykjavik aroused many hopes, since various commentaries by reliable sources in Washington and Moscow forecast [illegible] agreements on the reduction [illegible] it is impossible not to [illegible] different' [illegible]

After asserting that [illegible] of the negotiations [illegible]

[illegible] Madrid *El Pais* [illegible] the Reagan administration [illegible] the American people [illegible] that the United States [illegible] achieved. While [illegible] least the impression that the [illegible] match, but only for the sake of [illegible] the political problems which [illegible] within the next years. If the President's presence [illegible] the final period of his term [illegible] the Defense and State Departments [illegible] have an adverse influence for the Republican Party [illegible] ing Reagan in the coming U.S. congressional [illegible]

It concludes: "More than specific agreements [illegible] tion and also on human rights regional conflicts — as Reagan emphasized time and time again [illegible] that these issues were inseparable. [illegible] success or failure of this encounter [illegible] ensuring the superpowers [illegible] seems to be ruled out for the present."

It has not been long since Reagan [illegible] the issue stated that the danger [illegible] superpowers and leaders [illegible] them which should be shared [illegible] which could reduce the [illegible] single move. This warning should [illegible] but the sad times [illegible] meeting. However, these [illegible]

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CSO: 5200/2420

U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

PRC ENVOY TO UN URGES U.S., USSR TO CONTINUE ARMS TALKS

OW160706 Beijing XINHUA in English 0647 GMT 16 Oct 86

[Text] United Nations, October 15, (XINHUA)--China urged the United States and Soviet Union to continue negotiations to overcome the stalemate in the Iceland disarmament talks.

Addressing the first committee of the 41st session of the General Assembly this afternoon, Fan Guoxiang, China's ambassador in charge of disarmament affairs to the U.N., expressed his disappointment concerning the summit in Reykjavik, Iceland last weekend between U.S. President Ronald Reagan and Soviet leader Mikhail Gorbachev. The meeting ended in a stalemate.

"Dialogue is better than confrontation," he said, calling on the United States and Soviet Union to negotiate seriously to reach agreements conducive to easing tensions and world peace.

Nuclear disarmament has always been the utmost concern of the international community. It is universally desired that the U.S. and Soviet Union stop their arms race and drastically reduce their nuclear weapons, he said.

However, neither bilateral nor multilateral negotiations have achieved any real progress in this regard, he said.

"China consistently holds that the ever-escalating nuclear arms race constitutes a grave threat to international peace and security, and that the ultimate goal of nuclear disarmament should be the complete prohibition and thorough destruction of nuclear weapons," he said.

As a first step toward this goal, he added, the two nuclear powers which possess more than 95 percent of the world's nuclear weapons should take the lead in halting test, production and deployment of all types of nuclear weapons.

He said they should keep their promise made in the past year to take the lead in cutting 50 percent of their nuclear stockpiles.

On the negotiations between the United States and the Soviet Union on the reduction of intermediate-range nuclear forces (INF) in Europe, he said that China, as an Asian country, has every reason to feel concerned with the nuclear threat within its own region.

"The mere reduction of INF in Europe will not make Asian countries feel safer if the question of Asian-based INF is not dealt with, as the security interests of various regions are interrelated and influence each other," he said.

He stated China's position that the medium-range missiles deployed by the Soviet Union and the United States in both Europe and Asia should be reduced and destroyed simultaneously in a balanced way.

Referring to conventional disarmament, he pointed out that the two superpowers and their major military allies also bear special responsibility.

He said that China will submit draft resolutions to the committee at the present session, on both nuclear and conventional disarmament, and hoped that other delegations will give them careful considerations.

On the prevention of the arms race in outer space, he noted that the United States and Soviet Union, which have the largest space capabilities remain far apart in their positions. "Already possessing some space weaponry, both of them are carrying out research and development for new types of space weapons," he said.

"China has consistently opposed the arms race in outer space, no matter who does it or in whatever form it takes," he said. He proposed that all countries with space capabilities should refrain from developing, testing and deploying weapons in outer space in order to create favourable conditions for negotiations.

He told the committee that the Chinese Government decided last year to cut its troops by one million, which will be completed by the end of this year.

China has shifted a considerable portion of its military industry to civilian production and turned some military installations over to or shared them with civilians, he said.

"As we are concentrating our efforts on economic construction and working for the gradual improvement of our people's livelihood, we have neither the intention nor the capability to take part in the arms race," he said.

The First Committee of the 41st Session of the General Assembly responsible for disarmament and international security is holding its general debate this week.

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CSO: 5200/4011

U.S.-USSR NUCLEAR AND SPACE ARMS TALKS

XINHUA ANALYZES OUTCOME OF TWO-DAY SUMMIT

OW130922 Beijing XINHUA in English 0840 GMT 13 Oct 86

["News Analysis: An Arduous Dialogue by Correspondent Shi Lujia" -- XINHUA headline]

[Text] Washington, October 12 (XINHUA) -- The two-day summit between President Ronald Reagan and Soviet leader Mikhail Gorbachev ended in Reykjavik, Iceland, today with no specific agreement finalized and no exact date fixed for a full-scale summit, due to be held in Washington by the end of this year.

Both sides felt disappointed at the outcome of the hurriedly-arranged meeting and blamed each other for the failure.

According to Gorbachev and U.S. Secretary of State George Shultz, during four rounds of talks at the two-day meeting, both sides were considerably close in their stands on reducing intermediate-range missiles in Europe and Asia and on strategic offensive arms. They also made some progress on the question of nuclear testing.

But in their discussion on the U.S. Strategic Defense Initiative (SDI) known as the "star wars" program, the two sides took opposing stands and neither would give up its own position. As a result, the two-day meeting broke down.

The United States and the Soviet Union have differed over the "star wars" program for a long time. Since President Reagan put forth the program, Moscow has repeatedly accused Washington of violating the 1972 Anti-Ballistic Missile Treaty and seeking military superiority.

During their talks, the Soviets used a tougher strategy. They linked not only the strategic weapon reduction but also the intermediate-range missile issue to the "star wars" program. Reagan had proposed a delay in SDI deployment for 10 years, in exchange for the total elimination of U.S. and Soviet ballistic missiles, but Gorbachev insisted that "star wars" should only be tested in laboratories. As Shultz stated, the United States rejected the Soviet demand because it would "kill off" the program.

Why are the two superpowers so serious about the "star wars" program? It is because that the nuclear weapons in the United States and the Soviet Union are at a saturated point, and the relative strategic balance in existence between the two countries gives the U.S. could hardly be upset even with improvement in the quality and quantity of their strategic arms. Whoever masters defense weapons in space might gain first-strike capability.

Of course, the dispute over the "star wars" program between Washington and Moscow is only a reflection of the confrontation between the two superpowers in the current situation. It was also reported that both sides made no significant progress on other global and regional issues.

Observers here noted that the summit between the United States and the Soviet Union in Ireland showed once again that the two superpowers hope to continue their dialogue and relax their tense relations, but their dialogue is an arduous road, a road full of twists and turns.

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CSO: 5200/4010

SALT/START ISSUES

SOVIET MILITARY JOURNAL ON COMMAND, CONTROL OF U.S. AIR FORCES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 86 (Signed to press 11 May 86) pp 38-41

[Article by Col V. Tamanskiy, Candidate of Technical Sciences, Col V. Grebeshkov; "Command and Control of U.S. Air Forces"]

[Text] THE DEVELOPMENT OF THE U.S. AIR FORCE COMMAND AND CONTROL SYSTEM Presently, while the aggressive imperialistic forces are actively pursuing a policy of inflating the arms race and further complicating the international situation, the U.S. military leadership is carrying out a number of programs to build-up the combat power of the armed forces. At the same time, a program for improving the country's armed forces control system forces and its subsequent development, including the air force, is at the center of attention. American military specialists note the following main trends in solving the given task: an increase in control effectiveness, stability, flexibility and security.

The problem of increasing the stability of the air force's control system acquired special urgency when the U.S. military-political leadership adopted the "direct confrontation" strategy. The idea of conducting a lengthy war using nuclear weapons is openly being proposed for the first time in it, so that it is impossible not to influence the development of the armed forces. With regard to the control system, it became apparent in that, in accordance with the command's requirements, it must operate continuously under normal peacetime conditions, during a preparation period for the unleashing and conduct of a lengthy war using nuclear weapons. Actually the question concerns a system that must be able to function after the delivery of retalitory nuclear strikes by the opposite side. This, according to American expert opinion, can be achieved only with a significant increase in its survivability. The attempt to insure the control system's effective functioning during enemy radio-electronic jamming led to the emergence of another part of the requirement, the increase in its jam-resistance. In addition, control stability depends on its reliability.

As foreign press pages note, the rational combining of fixed and mobile control posts and the integrated use of various communication systems for the mutual exchange of information between them is the main method of increasing the survivability of the air force's control system. This is explained by the

fact that, with the emergence of highly accurate nuclear missiles, existing underground protected fixed command posts ceased to satisfy the requirements for survivability, and now belong to the class of targets which can be put out of commission at the beginning of a nuclear missile war. To strike mobile control posts, not having permanent coordinates, is much more complicated. Therefore, their use at strategic and operational-tactical levels substantially increases the survivability of the air force's control system.

Airborne command posts, placed at the disposal of the Joint Chiefs of Staff (four E-4 aircraft), the SAC commander (approximately 30 EC-135 aircraft, including the ACPs, airborne command posts for ICBM launches and relay aircraft), the commanders of the U.S. Armed Forces Unified Commands in the European zone, and the Atlantic and Pacific Oceans (EC-135) have received the greatest development at the strategic level in the U.S. As a rule, technical communications units and data processing and display systems are deployed on airborne command posts, allowing the task of controlling subordinate forces to be executed during a flight along a given flight route. As the foreign press notes, the emergence of mobile ground command posts at the strategic level is possible along with airborne ones.

Mobile ground command posts, developed on the basis of special vehicles, in which the necessary complex of technical data processing, display and transmission equipment is installed, are the most widely deployed at the operational-tactical level. At the same time, the use of airborne command posts, such as the EC-130 and E-3 are being planned for use at this level.

Judging by American press materials, the U.S. Air Force command is paying special attention to the issues of increasing the survivability of communications since, during the employment of nuclear missiles, antenna systems can be put out of commission primarily by the shock wave. In order to reduce the latter to a minimum, command posts are connected with one another by various types of communications systems, including satellite communications. During the course of the work to increase the survivability of the air force's control system, the Pentagon intends to deploy and use state-of-the-art communications systems for both strategic and operational-tactical level control organs.

The achievement of a higher jam-resistance control system is provided by carrying out a series of organizational and technical measures. The technical measures pursue the goal of developing and equipping the air force with control systems which possess increased jam-resistance, and organizationally the development of a structure which provides the most effective use of these systems.

As foreign press materials note, high control reliability can be achieved by the following means: by equipping control posts with technical information processing, display and transmission equipment developed using state-of-the-art microelectronics; by making (duplicating) the most important elements and nodes redundant; by integrating the use of land-line and radio communications operating in various bands of the electromagnetic spectrum, from very long [VLF] waves to milimeter waves; by further developing and combining the use of

technical reconnaissance systems as important sources of information about the enemy.

It is emphasized, that state-of-the-art microelectronics, of which integral micro systems comprise the basis, allow reconnaissance and information processing, display and transmission systems to be developed having an average mean time between failures of 10,000 hours and an improved average restoration time, not exceeding 15-30 minutes. This insures that the radioelectronic equipment's correct coefficient of operations approaches 1.

In practice, the redundacy (duplication) of the most important elements and nodes in the control system is the traditional and most widely used method of increasing control reliability. This method allows the required (assigned) reliability to be achieved even with the existence separate elements, junctions and control system equipment which are highly imperfect from the standpoint of reliability.

As the Western press notes, the integrated use of communications systems, allows the reliability of communications between control points in various situations to be significantly increased even during the employment of nuclear weapons. At a strategic U.S. Air Force control level, the main efforts are being directed at increasing the reliability of the following communications links: the JCS, the SAC commander, ICBM launch control posts and strategic aviation aircraft. Within this plan, a great deal of attention is being paid to implementing programs to improve and develop new satellite and long-wave (super long wave) communication subsystems.

According to foreign press reports, currently a terminal operating in the 225-400 MHz range, is most widely used on the Air Force's AFSATCOM satellite communication system. In the near term plans, with the commissioning of the Department of Defense satellite communications subsystem it is planned to install AFSATCOM system relays along with the DSCS-2 equipment being used, which operates in the 7-8 GHz band. In a more distant prospect, it is planned to adopt the new MILSTAR satellite communication system, transferring operations to the 20-44 GHz range. According to American specialists' opinions, due to the use of noise-based signals (which have a wide band width for transmitting transceiver paths) and the increase in the gain coefficient of antennas and their directivity, not only is communication realiability increased, but also its jam-resistance. The American press notes that there are two programs in the realm of long-wave communications: the development of a new GWEN communications subsystem and the equipping of strategic bombers with small-sized long wave band receivers.

The GWEN communications subsyten will operate in the long-wave band of the electromagnetic spectrum (150-175 kHz). It is designed for sending commands for ICBM launches and the take-off of strategic aircraft by using long-wave band frequencies' propogation phenomenon of a surface (ground) wave. Commercial and military (air force) long-wave communications transmitting centers, deployed on U.S. territory, will comprise the basis of the subsystem. It is planned for it to become operational in 1990.

The equipping of strategic bombers with small-sized long-wave band receivers will increase the reliability of sending commands to strategic aircraft in the air. The beginning of series production of such receivers is planned for 1987.

As it was mentioned above, the main efforts on the operational-tactical level are being directed at providing reliable communications in nets: the air force's large force commander, the commander of an air force unit (subunit), and the air crews and between them on the ground and in the air. Improving the communincations systems at this level is being accomplished through several programs: HAVE CLEAR, HAVE QUICK, SINCGARS and JTIDS.

The HAVE CLEAR program, for which approximately 3 billion dollars was allocated to implement, envisions developing and equipping the air force with jam-resistant communications systems which must simultaneously conform to requirements, and be compatible with the communication and information distribution system being developed under the JTIDS program.

According to the HAVE QUICK program (approximately 100 million dollars has been allocated for it), firms are busy developing and equipping the air force with AN/ARC-164 modernized radios for installation in aircraft (around 7,000 radios have been purchased) and on the ground (5,000). The SINCGARS program is aimed at developing a ground and aircraft ultrashort frequency range system, operating in the 30-300 MHz range, but the manufacturing cost for its communications systems is exceeding 100 million dollars.

In solving the task of increasing the U.S. Air Force command's control reliability, a great deal of attention is being paid to the development of reconnaissance systems and resources, which is reflected in corresponding programs. In particular, the foreign press mentions the programs to improve the missile strike warning systems: IMEWS, BMEWS and PAVE PAWS; space monitoring systems; air target detection systems; and also aerial and space reconnaissance systems. At the operational-tactical level, the main attention is being paid to programs for the development of technical reconnaissance systems and reconnaissance information processing and distribution centers.

Along with improving the equipment for solving the task of improving control reliability, the Air Force command is carrying out organizational measures, establishing the order and operational rules for offical personnel, and the use of command posts and control systems.

As the foreign press notes, the air force's high control effectiveness can be achieved by widely using, within the framework of a single plan at the strategic and operational-tactical levels, those processing resources for displaying and transmitting data, which comprise the basis of an automated control system. In connection with the fact, that the control of the air force is carried out not only by its own, but higher existing control organs, the solution to the problem of increasing control effectiveness is tied in with the improvement and development of automated systems, with which the air force control posts, the U.S. Armed Forces, and above all the JCS and CINCs of the Unified Commands are being equipped.

As the foreign press reports, presently the following are being equipped with automated systems: JCS (ACS NMCS) ground control posts and its airborne command posts; the ground control posts of the Secretary of the Air Force and staff (ACS 473L), the Specified Commands CINCs (for example, SAC, ACS 465L; AFSPACECOM, ACS 427M, etc.), and the CINCs of the U.S. Armed Forces Unified Commands; the airborne command posts of the U.S. Armed Forces Unified Command CINCs in the European areas, the Pacific and Atlantic Oceans, and CINC SAC. Technical automated systems are being used at the operational-tactical level within the framework of the 485L ACS for tactical aviation combat operations.

Judging by American press materials, the main efforts for solving the problem connected with increasing control effectiveness are being focused on improving existing and developing new technical automated systems for mobile control posts, above all, airborne command posts. In particular, in 1984, the air force command concluded a contract for the modernization of 39 EC-135 aircraft. The program will extend over a seven-year period and cost approximately 200 million dollars. At the same time, attention is being focused on further developing the technical automated systems located at ground control posts. The program to develop a new ACS for the Military Airlift Command testifies to this. According to American specialists' opinions, it will allow all the necessary initial information to be sent to MAC during preparation for execution no later than one minute after an inquiry.

A program to further improve the 485L ACS is intended for the operational-tactical level. It is directed at reducing the time for delivering assigned orders to subordinate forces and at expanding its capabilites for the correlated processing of received information, its accumulation and timely representation.

For solving the problem connected with increasing control flexibility, the Air Force command is first trying to implement a control system capability which more fully responds to a situation change. In this regard, it is focusing the main attention on achieving harmonious unity and continuity of the control structure for operations in the usual peacetime environment, during preparation for the beginning of military operations and during a war, including the use of nuclear weapons.

In trying to increase control security, the U.S. Air Force command is pursuing the goal of keeping the planned measures and operations of the control organs and subordinate forces a secret from the enemy. Since the air force control system is comprised of technical control systems, above all radioelectronic ones, then the most important issues concerning the achievement of security is solved by the security and radioelectronic warfare command (Electronic Security Command). It conducts an entire aggregate of special and technical measures, in particular the monitoring of technical information transmission systems operations, the monitoring of the conformance to established rules and radio exchange modes, and the use of secure communication channel systems, etc.

Thus, within the general aggregate of measures to increase the air force's combat power, the U.S. Armed Forces command assigns an important place to the

development of an air force control system, which corresponds to modern requirements and is capable of carrying out its functions in various conditions, including during the conduct of a lengthy war with the use of nuclear weapons.

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SALT/START ISSUES

SOVIET MILITARY JOURNAL ON U.S. SUBMARINE COMMUNICATIONS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 86 (Signed to press 11 May 86) pp 56-59

[Article by Capt 1st Rank A. Markov (Ret); U.S. Nuclear Submarine Communications"]

[Text] Pentagon planners assign an important role in general nuclear war to nuclear powered ballistic missile submarines (SSBN), which, even in peacetime, are on patrol in constant readiness to execute orders to launch missiles against enemy targets. General purpose nuclear submarines (SSN), with intelligence missions,. are on ASW barrier patrols, providing security to the fleet's strike forces and ever ready to use their own weapons (torpedoes and guided missiles, including antisurface missiles).

U.S. submarine forces have developed along both lines of increasing their combat power and to enhancing their invulnerability against enemy reaction. Among the most important measures which afford secrecy to underseas operations, the U.S. high command lists: a special operational regime for their activities; reduction of the level of physical fields, especially acoustic and electrical; and application of modern nagivation systems. Modernizing existing and the design and building of new systems and means of communciations with submarines, especially those at great depths, is, as the foreign press notes, fundamental to maintaining them in a state of high combat readiness.

Successful control of submerged submarines is quite a complex problem, which the U.S. Navy has been trying to overcome for the last 20 years, according to the foreign press. The main difficulty is that the radio signal penetrates a depth of water where its energy is absorbed depending on the wavelength, distance of the receiver from the transmitter, signal power, receiver depth, the speed of antenna movement and a range of other factors. The degree of absorption and the depth of signal penetration into the water medium are shown in Fig. 1.

Modern developments in electronic technology enable a sufficiently wide use of low frequency and very low frequency for communicating with submarines. Use of the even narrower, so-called extra low frequency (ELF) is loosely linked to the need to apply very high radiated power and large complex antenna systems.

Transmission of data through the water in the HF (optical) range demands energy concentration into a very narrow directional beam and is related to application of laser techniques in the region where the submarine is located.

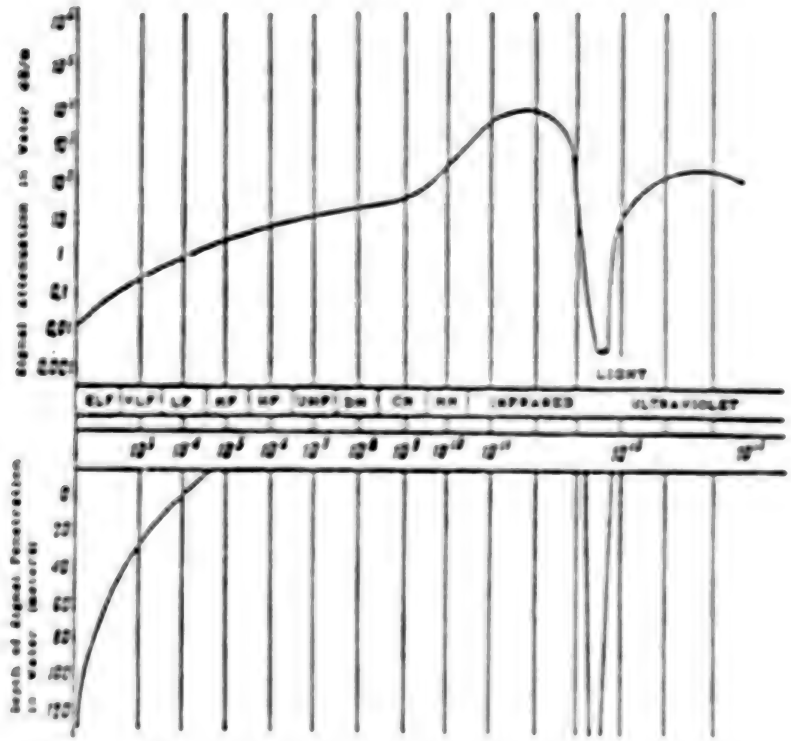


Figure 1. Graphic Depicting the Degree of Signal Absorption and Their Depth of Penetration in Water

At the present time, SSNs are controlled through a network of shore communciations stations. They are distributed in all important world areas, contiguous to the sea areas where U.S. SSNs operate. The stations operate broadcasts for them without requiring acknowledgement. To increase communications reliability, each region of the theater operates at least two stations which, through the use of VHF, HF, LF and VLF bands repeat the basic message many times.

VHF transmissions are line-of-sight or via satellite (frequency 225-400 MHz) FLTSATCOM, which in the latter part of the 1980s, will be replaced by LEASAT. Four satellites of the latter system are already in stationary orbit.

One of the channels of the satellite (25 kHz bandwidth) is designated for retransmission of fleet broadcast transmissions, including those for submarines. In this mode transmission "ground to satellite" are in the

centimeter band and "Satellite to ship" in the decimeter. The AN/FSC-79 groundbased system is used to transmit broadcast traffic. It is installed at the primary communications centers at Norfolk (U.S.), Honolulu (Hawaii), Naples (Italy), Guam (Pacific) and Diego Garcia (Indian Ocean) Transmissions are received on SSNs with a unique (in the Navy) receiver, the AN/SRR-1. To assure communications reliability and to increase channel capacity for the broadcast, transmissions to SSNs employ digital equipment, permitting information transfer at speeds of 2,400 BPS. This equipment is deployed at shore communications centers and on submarines and allows high speed transmissions as well as ship to shore.

The HF band (3-30 MHz), relative to the other bands, is used as a backup, because its signal path is not sufficiently stable and it is subject to countermeasures. It requires a considerable time to establish and conduct communications.

To receive VHF and HF signals, submarines have to be either on the surface or at periscope depth and use retractable antennas.

The majority of shore naval communication stations, as well as U.S. stations, deployed in the European countries and in the Western Pacific, are equipped with LF transmitters, ensuring communications at ranges of 3,000-4,000 km. Primary shore communications stations have VLF transmitters (3,039 kHz) which ensure communications with submarines at distances up to 16,000 km. There are seven such stations in the U.S. Navy today: three of them--Annapolis (Washington), Lualualei (Hawaii) and Balboa (Canal Zone)--were built before WWII and have been modernized several times. In the 1960s, they built the communciations stations at Cutler (Maine), Jim Creek (Washington), Northwest Cape (Australia) and San Francisco (California). The Cutler transmitting site is equipped with one transmitter of 2,000 KW power, Jim Creek has two 1,200 KW and the rest have one 1,000 KW transmitter. Basic working frequencies are 18-35 kHz.

The foreign press notes that shore stations, especially the VLF ones with their massive antenna fields, are subject to enemy interference. The antenna field at Cutler covers about six km². Several antenna sections are located there, mainly rhombics, suspended on steel supports at heights from 250 to 300 m. The U.S. Command has stated that, at the outset of combat action, the majority of communications stations could be destroyed. Therefore, they consider that, for reliable control of submarines, primarily missile boats, it is necessaryto have communications systems with increased survivability, range and depth of submerged travel of signals.

Major hope in solving this problem was placed on development, again in the 1960s, of a reserve system of VLF communications, installed on airborne relays, called TACAMO. It must transmit in a timely fashion and with great reliability the orders to SSBNs to employ nuclear weapons. In the so-called TACAMO system, messages are placed on the broadcast channel for submarines on special lines linked with the high command of the armed forces and the Navy.

The EC-130 airborne relays, or TACAMO, are organized into two squadrons with nine aircraft each, operating in the Atlantic and Pacific theaters. They are especially equipped for watch sections with equipment for receiveing and relaying signals to submarines. The watch section is situated in the forward fuselage section with the central control post, operator stations, which control exchange of information over telephone and teletype communications channels, and the VLF transmitter operator station. The receiving and transmitting equipments, power amplifiers, information processing equipment, the output stages of the transmitter and equipment for antenna matching are located in the tail section.

TACAMO communications equipment includes: four AN/ARC-138 VHF radios, two AN/ARC-132 HF equipments, one AN/ARC-146 satellite communications station, as well as HF, MF, LF and VLF receivers. For communications relay, the aircraft has an AN/ARQ-127, narrow band 200 kW VLF transmitter operating on a frequency of 21-26 kHz. Transmissions to submarines are in teletype and manual telegraphy (morse code) form. One element in improving communications is the towed antenna 10 km long, which is reeled in and out on a special rig.

During their airborne shift, the aircraft-relay conducts its flight is assigned areas at 8,000 m altitude and at 330-550 km/hr in an 185 km circle with antenna reeled out. The summary data from the multi-year experience of the TACAMO system, according to the Western press, shows that their transmissions have been received by submarines at antenna depths of 15 m and at ranges from the aircraft primarily at relatively short distances, but possible up to 10,000 km.

According to the foreign press, the TACAMO system is being improved. The aircraft's radio equipment has been improved and updated, broadly incorporating computer technology. Fifteen E-6A aircraft have been ordered, designed along the lines of the Boeing 707. Commencing in 1987, as service life resumes depleted, the EC-130Q will be replaced by the newer E-6A.

For communications with submarines at any time and at depths which protect the secrecy of their activity, the U.S. has begun using ELF band (0-3,000 Hz), whose waves have a negligible coefficient of attenuation on penetrating the water medium (up to .1 dB/meter) and an increased resistance to radiations from nuclear blasts. With a sufficiently powerful transmitter, ELF can propagate to distances over 10,000 km and penetrate the water to depths of 100 m.

In the 1960s, attempts were underway to build such a system, but, because of the high cost and many other reasons, the project was scrapped and the test center closed in 1977.

In 1981 the U.S. government authorized a less-expensive project for this type of communications system now known as ELF (Extremely Low Frequency) at a cost of [illegible] dollars. Plans call for two transmitting centers with 3-5 MW transmitters. One will be the modernized test bed station in the state of [illegible] where an increased power transmitter is already installed. In 1982-[illegible] experimental transmissions were made from this station to [illegible]. They received the signals at depths up to 100 m and at

speeds of up to 20 kts. The second center is being built in Michigan. To simplify construction and exploitation, the antenna system (general length of about 100 km) will be suspended on steel towers 1.8 m high.

The frequency of 45-80 Hz has been selected for communications use, over which will be sent commands, consisting of 3 letters, lasting 5-20 minutes. The Navy considers that this system will be an auxiliary one whose objective will be to advise the submarine to come to shallow depth and receive messages via other communications means. Once the system is completely on line, it is planned to equip all SSBNs and SSNs with receiving equipment. Center operations will be controlled from one control center, although they will be serving different theaters. When there is a necessity for increased reliability for receipt of especially important information, both centers can be synchronized, which increases the radiated power.

Communications reliability with submerged submarines can be increased through the use of laser radiations. This communications system, widely acclaimed in the western press, permits transmissions to submarines at depths greater than 100 m, a greater capacity of data, and a higher data rate. They claim that it does not require use of any other backup means of communications, since satellite laser communications can assure operational-tactical and strategic control of forces.

As the foreign press has noted, the most efficient wavelength for communications in the light band is the blue-green spectrum (.42-.53 mkm), which can pierce the water medium with minimum loss and penetrate to depths of 200 m. However, building a laser communications system is not without a number of technical difficulties. They are currently conducting laser experiments, in which they are examining three basic variants for use.

The first variant is a passive satellite relay equipped with a large reflector (7 m in diameter, about 1/2 ton) and a powerful ground laser transmitter. In the second variant, it is necessary that the satellite have a sufficiently powerful transmitting device and a power plant several orders higher. In both variants, communications reliability is guaranteed through a high-precision system of guiding and accompanying the communicationss target with a laser beam. A third variant is under examination, wherein they are looking at development of a laser beam, using a lens and mirrors which will concentrate solar energy.

The state of current technology, in foreign specialists' opinion, will permit laser power in the first variant of 400 watts with a pulse repetition frequency up to 100 Hz, and in the second, to deploy in orbit 10-watt lasers with pulse repetition frequencies of 18 Hz. experimental types of laser communications systems may be developed in the 1990s, but working devices will not be built before 2000.

Submarines, irrespective of their employment while executing assigned combat missions, operate in radio silence in order to maintain secrecy. Only in extraordinary circumstances, involving emergencies, inability to carryout combat assignments and reports of especially important information do they approach in order to be able to remain on the surface or at periscope depth

for a minimal time to conduct radio communications, those communications must be transmitted at very high speeds in digital format and through the FLTSATCOM satellite system, as well as in the HF band. The existing network of shore stations assures receipt of such transmissions on varying HF frequencies with high reliability.

In peacetime when sailing on the surface, submarines may employ the entire range of radio equipment on board.
In the OHIO-Class SSBNs, the installed radio equipment has been designed according to a project called "integrated communications center." It provides for equipping the radio room with automated systems of communications control and message distribution, which enables them to reduce the number of watchstanders to one or two. For the LOS ANGELES-Class SSNs, a unified communications center has been designed which includes ship transceivers, signals intelligence equipment, communications countermeasures, identification systems and underwater communications. Automated systems on these ships and on SSBNs includes the AN/UYK-20 computer.

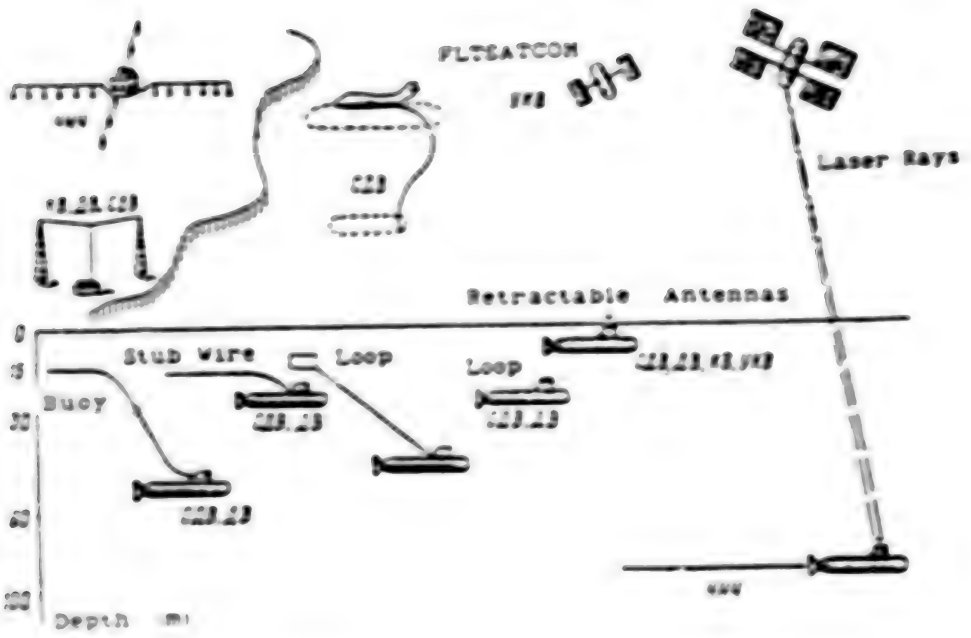
The communications package on nuclear submarines includes: one ELF receiver (installations now beginning); two MF, LF and VLF (10-3,000 kHz) receivers; several HF receivers; AN/SRR-1 installation for general message transmission via FLTSATCOM satellite; two HF transmitters (1 kW power); permitting duplex communications between the submarine and the shore using manual and automatic morse telegraphy and radiotelephone; two 1 kW HF transmitters (2-18 MHz); two VHF systems (one AN/WSC-3) enabling communications of all types with shore stations and moving objects through the satellite system. A special system of digital communications guarantees a highspeed data transmission rate.

The antenna systems on submarines is the fundamental source of [illegible] communications. These are (Fig. 2): a wire antenna, over 1,000 m long, towed at depths below 100 m, for ELF reception (not yet installed); a towed wire antenna (300-900 m) for LF and VLF reception. In order to expose the active elements of the antennas for reception (no more than 20 m), the submarine comes to a 30 m depth and when its depth is less than 40 m, the antenna is supported at reception depth by a buoy; a towed VLF loop antenna has a working reception depth under 10 m, which determines submarine speed (up to 3 kt) and length of tow (500-600 m); and an onboard loop antenna for VLF reception at depths no greater than 30 m.

Transmitting and receiving omnidirectional antennas for HF and VHF (dipole and whip) as well as satellite communications systems are installed on retractable masts and are used only when the submarine is on the surface or at periscope depth. The satellite system antennas are a directional [illegible] with gyro servomechanisms for maintaining it on the proper azimuth and with [illegible] range control to bring it to bear according to the angle.

Submerged SSNs communicate in HF and VHF using the AN/BRT-1 radio buoy. Beginning in 1981, these buoys have been modernized and their [illegible] have been replaced with satellite communications.

Emergency communications from submarines to ships, aircraft and [illegible] is done by an automatic system, transmitting in HF through a buoy [illegible]



УНЧ : Extremely Low Frequency
ДВ : Long Wave
УКВ : Short Wave
СВ : Very Low Frequency

Figure 2. Types of Submarine Antennas for Receiving Radio Transmissions at the Various Wave Lengths

from the submarine and floating on the surface. This communications buoy is equipped with a telescoping antenna.

This short overview of information reported in the writings of the foreign press points out the U.S. Navy's urgency to develop reliable systems of submarine control.

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INTERMEDIATE-RANGE NUCLEAR FORCES

SOVIET MILITARY JOURNAL ON TOMAHAWK VARIANT

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 5, May 86 (Signed to press 11 May 86) p 75

[Article by Col I. Karenin: "A New Variant of the TOMAHAWK Cruise Missile"]

[Text] At the present time, the American firm, General Dynamics, on order from the U.S. Navy, is developing a modification of the sea-based BGM-109C TOMAHAWK cruise missile which has been designated the BGM-109D. According to foreign press information, this cruise missile is intended for carrying out strikes on air fields for the purpose of destroying aircraft located both on open hard stands or in special shelters.

In contrast to the BGM-109C, which has a semi-armor-piercing war head, weighing 450 kg, the new missile variant will be equipped with a cassette war head containing as many as 222 subcaliber multiple action BLU-97B bombs. The bomb is a cylinder 10 cm long with a diameter of 6 cm. It contains shaped and incendiary charges, and also prefabricated fragments, which in combination, makes it possible to destroy not only armored and unarmored equipment, but also personnel. The BLU-97B can penetrate about 430 mm of armor. It is reported in the foriegn press that the cassette warhead will be made up of separate modules with bombs. In case of necessity, part of the modules will be dismantled and, in place of them, it is planned to install supplementary fuel tanks which will give the missile additional range.

Flight tests of the BGM-109D cruise missile were scheduled to begin at the end of 1985. In case the tests are favorable, it is planned to arm U.S. Navy surface ships and submarines with these cruise missiles.

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INTERMEDIATE-RANGE NUCLEAR FORCES

SOVIET MILITARY JOURNAL ON BRITISH [illegible]

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 4, Apr 86 (signed to press 7 Apr 86) pp 54-58

[Article by Sr Lt I. Dalin: "British Nuclear Submarines"]

[Text] The British political-military leadership, following the aggressive policies of the U.S. and NATO, are devoting increasing attention to the construction of nuclear submarines. As a result, Great Britain has one of the most powerful nuclear submarine fleets in the capitalist world (18 units) and is continuing to actively build new SSNs. Their fleet is composed of the following classes of SSNs: VALIANT (lead ship plus five others), SWIFTSURE (six units), TRAFALGAR (three in service and two under construction), and also one class of SSBN, RESOLUTION (four units). Their tactical-technical characteristics, taken from the latest data in the foreign press, are shown in the table.

The VALIANT-Class SSN [illegible] lead ship entered operational fleet service in 1966, and during the period 1967-1971, four more followed: WARSPITE, TIRELESS, CONQUERER, and CONQUEROR.

As indicated in the foreign press, it was decided during VALIANT's construction to adopt the whole [illegible] Royal Navy's first nuclear submarine in service from [illegible] nuclear propulsion plant at British manufacturing plants [illegible] changes and improvements [illegible] were also incorporated.

For example, the [illegible] with hand to underwater [illegible] propulsion motors, that [illegible] installed in the stern. [illegible] operating at other speeds. [illegible] employed for the [illegible] number is effective only [illegible] with sizable ships and [illegible] such as used for [illegible]

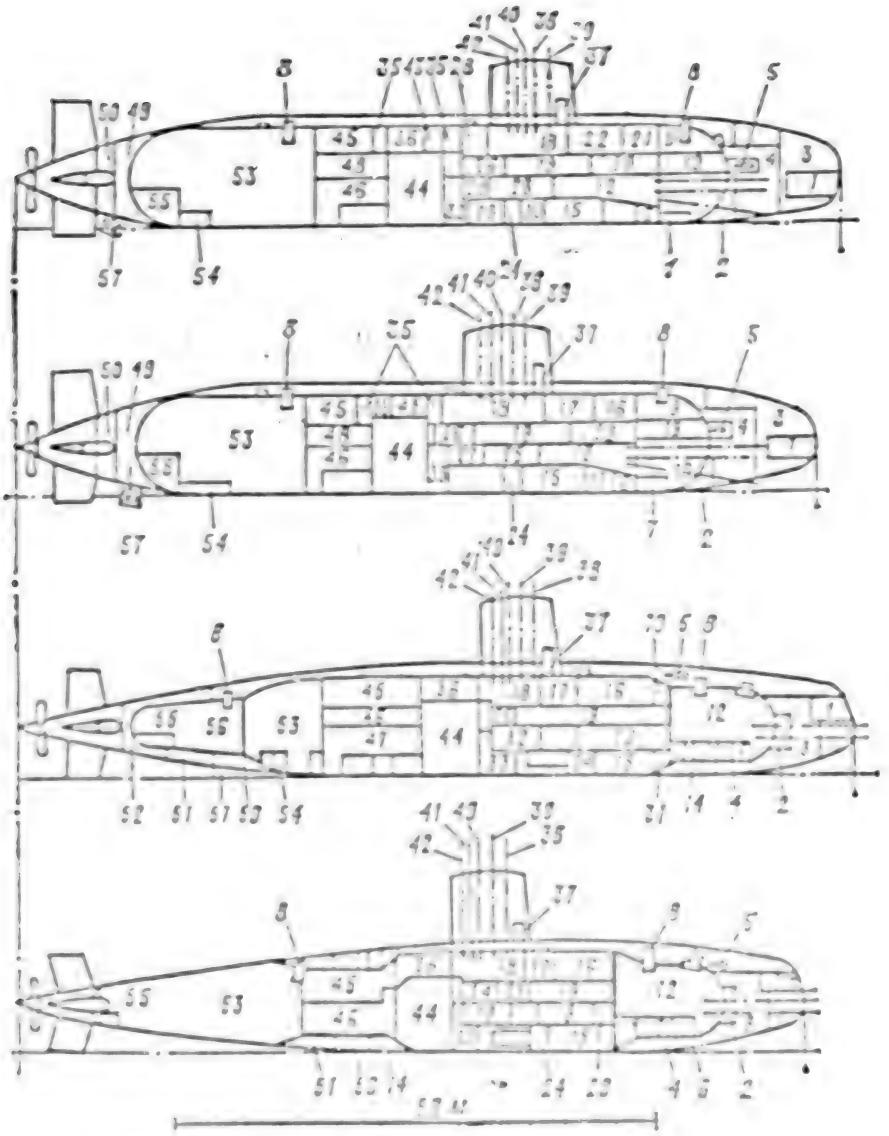

Figure 2. General-Arrangement Diagram of Royal Navy Nuclear Submarines
DREADNOUGHT, VALIANT, CONQUEROR, and TRAFALGAR (bottom to top)

1. Bow sonar array; 2. Torpedo compensation tank; 3. Main ballast tank (MBT) #1; 4. MBT #2; 5. Bow planes; 6. VBT tank; 7. Torpedo tube crash tank; 8. Escape trunk; 9. Escape room; 10. Store room; 11. Torpedo impulse tank; 12. Torpedo room; 13. Forward trim tank; 14. MBT #3; 15. Battery well; 16. Officer staterooms; 17. Sonar room; 18. Control room; 19. Berthing space; 20. Sonar equipment room; 21. Ship's computer equipment room; 22. Sonar and radar room; 23. Berthing space and ship's inertial navigation equipment room; 24. Auxiliary machinery space; 25. Radar and EW room; 26. Air conditioning room; 27. High pressure air manifold and ship's inertial navigation equipment room; 28. Radio room; 29. High pressure air manifold room; 30. Submarine electrical power control plant; 31. Air cleaning and regeneration equipment room; 32. Radio room and high pressure air manifold; 33. Diesel fuel tank; 34. Air conditioning room and high pressure air manifold; 35. Passageway air lock; 36. Tunnel; 37. Bridge trunk; 38. Retractable radar mast; 39. Periscopes; 40. Retractable EW mast; 41. Snorkel induction; 42. Snorkel exhaust; 43. Reactor plant control system and sampling room; 44. Reactor compartment; 45. Reactor plant control room; 46. Diesel generator room; 47. Turbine generator room; 48. Electrical distribution room; 49. MBT #3; 50. MBT #4; 51. MBT #5; 52. MBT #6; 53. Engine room; 54. Oil tank; 55. After trim tank; 56. Motor room; 57. Auxiliary propulsion motor.

Due to the measures undertaken to reduce noise, improve the propulsion plant, and make the fabrication of critical machinery easier, the displacement of the VALIANT Class submarines grew to 4,800 tons.

The planning process also revealed several shortcomings of these submarines: poor dynamic stability, an intolerable tendency to assume a down angle while submerged, and the pressure hull had an insufficient internal volume to permit future modernization of their electronic gear.

In order to eliminate these problems, the designers were forced to lengthen the pressure hull and incorporate trim tanks and a water-round-torpedo (WRT) tank.

Since inspections of DREADNOUGHT revealed hull cracks at the joints of her frames and hull plating, and stratification of the metal at the butt joints of that plating, designers refrained from using QT-35 steel and instead used American HY-80.

Compared with the American PERMIT Class, the VALIANTs have a greater displacement, lower top speed, and shallower diving capability.

SWIFTSURE, lead ship of a new class, entered the fleet in 1971, and the last unit (the sixth), SPLENDID, entered service in 1981.

During the construction of the SWIFTSUREs, attention was focused on improving their depth capability, increasing their submerged speed, reducing radiated and sonar self-noise, extending endurance, raising the operational speed coefficient, and improving the reliability and maintainability of the nuclear propulsion plant.

The increase in maximum depth over VALIANT was achieved by inserting a cylindrical section which constitutes a major portion of the length of the pressure hull and by using a new British steel (NQ-1) which is stronger than QT-35.

In order to reach high submerged speed, a new reactor core (Type 8) was developed which has a higher power density and longer core life than the VIT A core.

An analysis of the weight distribution and internal volume of the pressure hull led to a more efficient internal equipment layout, particularly in the engine room. In addition, the volume of the external main ballast tanks was cut to 11 per cent of the total submerged displacement, while internal main ballast tankage amounted to 2 per cent of the total submerged displacement.

The bow planes were moved into alignment with the ship's longitudinal axis aft of the bow sonar array (see Figure 2). This provides maximum control surface effectiveness while minimizing their size and consequently lowering hydrodynamic drag on the hull. The sail [illegible] the new position. In accordance with the [illegible] SWIFTSURE was also fitted with an [illegible] (VALIANT's is [illegible]). In [illegible] version, [illegible]

a better performance coefficient. In reality, however, this has not proven to be true. Such a stern section does provide a large volume to accommodate the after main ballast tanks and extra space for the arrangement of main propulsion equipment and machinery in the engine room.

TACTICAL AND TECHNICAL DATA ON BRITISH NUCLEAR SUBMARINES

SUBMARINE CLASS NUMBER IN SERVICE (HULL NUMBER) DATES OF ENTRY INTO FLEET	DISPLACEMENT (TONS) SURFACED SUBMERGED	BASIC DIMENSIONS (M) LENGTH/BEAM DRAFT	SHAFT HORSEPOWER MAXIMUM SPEED SURFACE (SUBMERGED)	TEST DEPTH (M)	COMPLEMENT TOTAL (OFFICERS)	ARMAMENT
			SSN			
VALIANT - 5 (S 102, 103, 46, 48, 50) 1966-1971	4330 4800	86.9 10.1 8.2	15,000 28 (28)	300	103 (13)	5 x 533 MM TORPEDO TUBES (31 TORPEDOES)
SWIFTSURE - 6 (S 126, 108, 109, 104-106) 1973-1981	4400 4900	82.9 9.8 8.2	15,000 28 (320	.	97 (12)	5 x 533 MM TORPEDO TUBES (25 TORPEDOES)
TRAFALGAR - 3 (S 107, 110, 117)	4450 5208	85.4 9.8	15,000 . (327	.	97 (12)	5 x 533 MM TORPEDO TUBES (25 TORPEDOES)
			SSBN			
RESOLUTION - 4 (S 22, 23 26, 27) 1967-1969	7600 8500	129.6 10.1 9.1	15,000 25 (25)	300	143 13	16 POLARIS A-3, 6 x 533 MM TORPEDO TUBES (20 TORPEDOES)

A significant amount of attention has been devoted to the problem of noise and sonar self-noise reduction. Accordingly, the bow sonar array, which on VALIANT was located above the ship's longitudinal axis, was placed below it on SWIFTSURE to reduce the effect of surface reflected signals. SWIFTSURE also has a special acoustic coating on her pressure hull and superstructure as well as a fiberglass fairing over her bow sonar array. A single platform was specially developed for this SSN's propulsion plant which holds the turbines, turbine generators, condensers, main reduction gears, and bed plates for auxiliary equipment. The latter provide sufficient vibration dampening right up to maximum plant operating power. Flexible hull sockets were installed to improve sound isolation of the condensers and sea water circulation system. The noise producing characteristics of all auxiliary equipment was thoroughly analyzed, and those which did not meet the new stringent specifications were replaced. It has been reported that the propulsion shaft rotation rate was reduced to minimize noise.

Special attention was given to designing the ship for long endurance and reliability of shipboard systems and equipment for which the following measures were taken: reduce the quantity and length of the sea water piping system and significantly upgrade the shock resistance of the main ballast tanks. Three types of compartment flooding detection and alarm systems were installed. In the first system, sensors are located in potentially hazardous (from the crew's standpoint) piping and are activated by a drop in pressure

associated with the loss of system integrity. The second system contains simple float sensors located in the lower part of the compartment. Lastly, a manual compartment flooding alarm system was included.

The weapons and electronic systems remained the same as those aboard VALIANT. However, the relocation of the bow sonar array to below the ship's longitudinal axis required that one of the six torpedo tubes be eliminated. Of the five remaining torpedo tubes, four are arranged in pairs one above the other from port to starboard athwartships, and the fifth is situated at an angle to the primary plane. Regardless of the difficulties in loading weapons, this torpedo tube arrangement is much more suitable for the purpose of optimizing the operation of the bow sonar system.

In order to improve the sonar search capability off either beam, a supplementary hydrophone array was installed which was integrated into the sonar suite. A new Combat Information Direction System was developed based on advanced computer technology.

In the final analysis, SWIFTSURE's displacement came out to be 100 tons more than VALIANT. This is an insignificant increase, however, compared with the multitude of alterations and technological improvements incorporated in her design.

TRAFALGAR was the lead ship of the next class of SSNs, and entered the fleet in 1983. The second, TURBULENT, entered in 1984, and the third, TIRELESS, in 1985. Altogether, seven of these SSNs are planned. Their design involved primarily new technology and lessons learned from their predecessors. Modifications of any sort were only made where they were absolutely essential.

During the planning process, the designers reached the conclusion that a further increase in depth capability was unjustified, considering the marginal gain in combat effectiveness, and no change was made. They are identical to the SWIFTSURES in that respect. With regard to the propulsion plant, they are also unchanged except for a new longer-lived Type 2 reactor core.

As before, a great deal of importance was attached to noise reduction. For this purpose, a [illegible] which has separate platforms for the main propulsion machinery and auxiliary equipment. The acoustic signature was further reduced through [illegible]

[illegible]

All [illegible]

The RESOLUTION-Class nuclear ballistic missile submarines entered service in the Royal Navy during the period 1967 to 1969.

Foreign experts consider the features of the RESOLUTION-Class SSBN design to be a combination of those developed for American SSBNs and preceeding British SSNs. The missile compartment was based on the American prototype, and the propulsion plant and torpedo armament were borrowed from the VALIANT design.

The nature of an SSBN design, however, called for a number of alterations and additions to be made. Therefore, special attention was devoted to developing systems to maintain the ship's depth by hovering and compensate for the weight of the missiles as they are launched, improved communication and navigation systems, and propelling the ship at low speeds. The growth in crew size meant that changes had to be made in the ship's life support systems.

The requirement to have adequate reserve bouyancy created a particular problem; there was a shortage of space in the bow and the stern. One of the main ballast tanks (1.5 per cent of the surfaced displacement) was, therefore, relocated inside the pressure hull. As it turned out, the submerged displacement of the RESOLUTION-Class SSBNs reached 8,500 tons.

As foreign experts point out, construction of succeeding generations of British submarines will be characterized by building small numbers within each class (five to seven units apiece) while capitalizing on American experience in their research and development of pressure hull designs, propulsion equipment, weaponry and other technologies.

At present, the British political-military leadership, in carrying out their aggressive plans, are continuing to pursue military objectives which include the development of new SSN designs. Their construction, however, will probably be delayed by the decision to build a new class of SSBN armed with the American TRIDENT-2 SLBM.

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CHEMICAL/BIOLOGICAL WEAPONS

SOVIET MILITARY JOURNAL ON U.S. BINARY WEAPONRY

Moscow VOYENNYYE ZNANIYA in Russian No 6, Jun 86 pp 20-21

[Article by Col S. Titov: "Binary Chemical Weapons"]

[Text] E. Morev from Riga, V. Pulkovskiy from Novgorod and other readers have written the editorial staff requesting information about binary chemical weapons and how to protect oneself against them.

We are publishing this material to assist training managers.

Continuing the unabated arms race, U.S. militarists are expanding their chemical weapons arsenal even though it already contains more than 3 million rounds and 150,000 tons of toxic agents. Last year a joint House-Senate conference committee sanctioned the renewal of nerve gas production. For fiscal year 1986 alone about $160 million have been allocated for chemical warfare preparations. The complete program for modernizing the U.S. chemical warfare arsenal will be in excess of $10 billion.

The U.S. Army has put special reliance on the new binary type nerve agents. These include VX-2 and sarin (GB-2) which are in the toxic agent tables. A chemical plant costing $22.1 million has been built in Pine Bluff, Arkansas. This facility will produce the following binary munitions: 155-mm sarin and 205-mm VX-2 artillery rounds as well as aerial bombs.

What are binary weapons? Conventional chemical munitions use a single prepared toxic agent obtained in fixed facility conditions. In opposition to this, binary munitions have two (hence the term) separated non-toxic or low toxic components. While the chemical round is in flight toward its target the components are mixed and there is a chemical reaction producing highly toxic agents, for example VX and sarin. The components used to obtain the corresponding toxin agent may both be liquid or a liquid and a powder. These systems also contain additives, catalysts to speed the chemical reaction process and stabilizers which preserve the individual components and the toxic agent obtained.

The enemy offensive chemical munitions include: aerial bombs, artillery rounds, rockets, cluster bombs, and aerial spray equipment.

The main components of any exploding type binary munition are the fuse, the burster, the body with chambers for the toxic agent components. Also there are the various auxiliary components to provide for component separation and mixing as well as the flow of the chemical reaction.

Figures 1 and 2 are diagrams of a binary 200-kg gravity aerial bomb and a binary 155-mm artillery round with sarin-2.

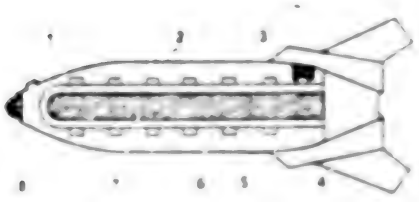

Figure 1. Binary aerial bomb with the toxic agent VX: 1 -- fill hole; 2 -- mixer; 3 -- motor; 4 -- tail fins; 5 -- steel tube; 6 -- liquid component; 7 -- powder (sulfur); 8 -- fuze.

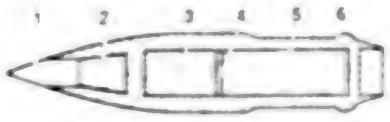

Figure 2. Binary 155-mm artillery round with sarin: 1 -- fuze; 2 -- burster; 3 -- canister DF; 4 -- rupture disk; 5 -- canister JP; 6 -- body.

One of the components in the form of a sulphur cartridge is in the central tube. The body is filled with liquid 2-(diisopropylamino)ethylmethylphosphononate (component QA). To increase the stability of this component during storage a stabilizer is added. The barrier between the components is ruptured at a pre-programmed time; they are mechanically mixed and within 7 seconds the reaction to form the toxic agent VX-2 is completed.

The most suitable non-toxic components for use in binary systems to form sarin and soman toxic agents are diphtoranhydrides and alcohols. For example, it is possible to use diphtoranhydride methylphosphonic acid (DF) and the isopropyl ester (JP). The catalyst is tertiary amin. Diphtoranhydride methylphosphonic acid and pinacol ester can be used to obtain soman (GD-2).

In the estimation of foreign military specialists, binary munitions are easy to produce, store and employ.

Thus, the U.S. is undertaking new dangerous steps on the path of increasing the arms race, exacerbating international tension and intensifying the military threat.

The position of the Soviet Union in regard to chemical weapons is clear: their production and deployment must be banned and the existing stockpiles destroyed.

Under the circumstances it is the responsibility of the chemical weapons possessing countries to improve civil protection measures, to inform the population and the population to protect themselves against chemical weapons.

protection provides a set of special measures prevent injuries and reduce the seriousness of injuries from toxic agents as much as possible.

To accomplish this chemical surveillance and reconnaissance will be conducted. The population will be notified of chemical contamination. Individual and collective protective measures and antidotes will be used when located or operating in an area subjected to chemical attack. There will be chemical monitoring of food products, water, protection resources, equipment and transportation. The population will be evacuated from the area which has been attacked. The results of the use of chemical weapons will be eliminated. Of course, it is necessary to study all the protective measures against this weapon.

Timely detection that the enemy has begun to employ chemical weapons is very important. This mission is assigned to the radiation and chemical detection posts which use chemical reconnaissance instruments. The initiation of a chemical attack is determined using these and external indications. The posts give the "chemical alert" on their own initiative and determine the direction the contaminated air is moving.

Chemical reconnaissance must determine the type of toxic agent and the level of contamination of the terrain, equipment and structures. They determine and mark the boundries of the contaminated area and search for routes to bypass or pass through the contaminated areas. This reconnaissance is organized by workplaces, rayon and city civil defense (CD) headquarters.

The population is notified of enemy use of chemical weapons so that they can take timely measures, primarily individual and collective protective measures. The "chemical alert" signal is given through radio relay networks and mobile loudspeaker units. While reporting the ground contaminated area and the wind direction of contaminated air, the least dangerous directions for evacuation from the possible contaminated zones is given. In population centers and workplaces the signal is repeated with sound and light signals.

At the "chemical alert" signal it is necessary to immediately don gas masks, use skin protection and, if one is available, take cover in the nearest shelter. It should be remembered that only a carefully selected and well fitted gas mask can dependably protect the eyes, face and organs from toxic agents. Respirators and simple protective devices will not protect the lungs against toxic agents.

Skin protection prevents against contamination from toxic agents in aerosol and liquid droplet form. There is also special protective clothing for this which are intended for personnel of non-military organizations. Everyone else can use capes, raincoats and jackets with impregnated cloth from rubberized cloth and synthetic films or other materials and even clothing of any usual fabric.

Collective means of collective protection for the population. If there are none nearby, then it will be necessary to use the basements and auxiliary facilities of cellar from which emergency exits were made. For more rapid exit from a room, [illegible].

While working in a chemical contaminated area, personnel in the nonmilitary formations use antidotes -- therapeutic agents capable of neutralizing or eliminating the toxic agent from the organism. For example, atropine can neutralize up to one deadly dose of nerve agent. Antidotes are used by members of the CD formations at the order of their commanders or on their own initiative upon initial appearance of toxic agent effects.

If the population is to be evacuated from the chemical contamination area they will be notified by the DEZ, housing management and the militia over the radio relay network and mobile loudspeaker units. Evacuation collection points are used to assemble, register and disperse people. During independent evacuation from a chemical contaminated zone representatives of the militia and civil defense will direct the population. But if there are none nearby then one should move perpendicular to the movement of the air (perpendicular to the wind), staying to the high ground and to places with good air movement.

After exiting the chemical contaminated area, the gas mask and protective clothing should only be removed when the individual is convinced that there is no toxic agent in the air or on the clothing.

Chemical monitoring is conducted in order to determine if or to what degree food products, water, individual protective equipment, clothes, equipment and transportation are contaminated. They determine if it is possible for CD formations and the population to operate without individual protective equipment and also if decontamination is necessary. Such monitoring may identify new, unknown toxic agents. It is accomplished by the Cb formation using military chemical survey and chemical survey instruments and chemical laboratories with their equipment, instruments and chemical reagents. The results of chemical monitoring are used to determine if facilities may be used for their primary purpose.

Civil defense forces eliminate the effects of enemy chemical weapons. They organize and conduct chemical reconnaissance and rescue efforts. They provide medical aid to the injured. They decontaminate terrain, structures and equipment, individual protection equipment and clothing. They provide for the [illegible] of contaminated people.

During rescue efforts, first they locate people and determine if they can be rescued and find out how many casualties there are. When rendering aid, they mask them, neutralize drops of toxic agents on exposed skin and clothing, and when necessary they inject antidote. Then they evacuate the injured to an assembly point where they are on the upwind side from the contaminated area. From these points they are evacuated to the nearest medical facilities by first aid detachments.

In order to keep CD formation personnel and the population from becoming casualties by coming in contact with contaminated equipment, transport, individual protective equipment and gear, they are decontaminated. This is done after they is evacuated from the contaminated area to decontamination or [illegible] areas. In these areas, they are treated with decontaminating solutions.

The effectiveness of measures taken to eliminate the effects of enemy chemical weapons can be significantly increased with quality preparation of nonmilitary CD formations, workers and the population for work in chemical contaminated areas.

[illegible]

NUCLEAR TESTING AND FREE ZONE PROPOSALS

FRG PAPERS COMMENT ON SOVIET EXTENSION OF NUCLEAR TEST BAN

United States Urged to Join

Frankfurt FRANKFURTER RUNDSCHAU in German 20 Aug 86 p 3

[Editorial by Ulrich Mackensen: "Blaring Brass"]

[Text] Since Mikhail Gorbachev took over as "head director" of Moscow's main orchestra, the orchestra's repertoire has changed. The notes with the warlike music of bygone years have vanished from the music stands--blaring brass had to give way to gentle strings. The public, primarily in Europe, watched this development with mounting interest. It also took note of the overtures the Eastern bandmaster made to his colleague in Washington to let the two orchestras make music together in peaceful competition. In Washington, however, no-one seems ready to change his style--here, march music is in greater demand than ever.

And no change was evident in the most recent response of the U.S. government. Gorbachev's announcement to extend the Soviet moratorium on nuclear testing to the end of the year was simply brushed aside. "Propaganda" is what it was called. Furthermore, Washington says it would have to continue its nuclear testing in order to stay in the race, in order to reach the same level as Moscow, that its series of tests have in fact already been completed successfully. What outrageous nonsense this last statement is, and what ill-considered palaver is the first "argument."

Indeed, propaganda is the only fitting description if it can be proved that there are no serious intentions behind the declarations. But the U.S. government is automatically obligated to provide this proof so long as it does not attempt to sound out what Moscow really wants.

On the other hand, Washington (as well as Moscow) has an overflowing arsenal of deployable nuclear weapons of all orders of magnitude. Both sides have thousands of short, intermediate, and long-range nuclear weapons, enough to kill each other out several times over. Nuclear tests would not be necessary for years to come; only the maintenance of a "balance of deterrence" would be involved. Hence, there must be other reasons for Ronald Reagan to react as he does.

Although the U.S. government repeatedly claims that its goal is not military superiority, responses such as the one to the most recent Gorbachev proposal indicate otherwise. The push for SDI weapons, the support of reactionary rebels in Central America, the decision to produce chemical weapons, and the debatable use of troops in Libya and elsewhere are all linked by a common thread.

America would clearly like to be the number one power on the planet again, cost what it may. And Ronald Reagan is obviously not concerned about going down in the page of history as a "president of peace," but, rather, as a stateman who used Rambo-like methods to eradicate the sensibility just awakened in the younger generation by Vietnam. This mentality, by the way, can also be seen in Germans when they concern themselves with their own recent history. Thus, there is no reason for one to hold one's nose too high in the air. But there is even less reason to feel at ease.

[illegible] European NATO partners of the United States must now slowly and seriously consider the question of how the alliance is to proceed in the future, in view of the militant course that its main power is taking. The close to a dozen examples of how Washington has so far responded to Moscow's [illegible] does not suggest that President Reagan has become unpredictable. On the contrary. It is now clear that Reagan's hardline position is predictable; parallels to the cold war are becoming increasingly evident. This, however, runs deeply counter to German and European interests. And just how uncomfortable this can become must be discernible from the fact that German interests are represented by a government that--at least where the CDU and CSU are concerned--is surpassed by none in its obsequiousness with respect to the U.S. government.

[illegible] could be much simpler here. If Reagan would accept a test moratorium--and it need be for only a limited time--the conditions for a summit meeting would certainly be far more favorable. It would then be much easier to ascertain whether genuine arms control agreements can be reached with the Soviets, whether more than just verbal progress can be made. Of course this could all go awry; but if it should, Washington alone would not be held to blame.

Gorbachev, too, is in a position where he must show evidence of success. He, too, could hardly venture so far as to awaken such strong public hopes among his own people if it is all just a front for a bluff.

Gorbachev's new tones are apparently not being heard in Washington. President Reagan seems to be hard of hearing when it comes to soft music. Will there [illegible] be another heyday for battlefield trumpets and war cries?

Gorbachev's Motives Questioned

[illegible] DER SPIEGEL [in German] 20 Aug 86 p 1

[illegible]: "Our Question--The Political Gist"]

[illegible] before departing for his summer vacation, officially announced yesterday in Moscow, Soviet Party leader Gorbachev once again urged the

Politburo of the CPSU to reach a decision on the extension of the unilateral Soviet moratorium on underground nuclear tests. He gave the impression that there was resistance to the idea in the Soviet Union, but, at the same time, he explained why he felt this extension was proper. He maintained that it is altogether possible that an agreement on reciprocity could be reached during a summit meeting between him and President Reagan. True, Gorbachev chose his words carefully--he did not specify the probability of such an agreement as a condition for a new summit meeting. Nevertheless, it has become clear that he would be satisfied if a new summit meeting produced such an agreement. And this is the political gist of Gorbachev's statement.

Until now, the United States has always maintained that it must continue its underground nuclear tests not only in order to modernize its arsenal of nuclear weapons, which have lost their edge technologically, but also to support its SDI research. That now appears to be the deciding motive for Gorbachev's call for a halt to nuclear testing. Were he to be successful in mobilizing sufficient public pressure on the President--and he has already met with some success in the American Congress--he might not only bring a half to American nuclear testing but, as a result, could also create the impression of having significantly weakened President Reagan's SDI program.

Contrary to current assumptions in this country, however, this would reduce, not strengthen, the incentive for genuine disarmament. Then, in order to achieve a limitation in the American SDI program, Gorbachev would no longer need to make promises for actual disarmament. In this respect, Gorbachev's highly popular call for a stop to nuclear testing--if he focuses on this--is not necessarily a positive sign. It could also mean that Gorbachev is currently not ready to take significant steps toward disarmament--in any case, not with the Reagan administration. He wishes, if possible, to tie up Reagan's government. Gorbachev does hope, however, to reach such agreements with Reagan's successors. In any event, there is much in favor of this skeptical interpretation.

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